THE BUILDER

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THIS WEEK'S NEWS

PAGE

SOME NOTES on current experience relating to the economics of heating small houses are contributed in a special article written by Mr. S. F. Newcombe 421

A SCHEME to establish a new community to be run on "positive health" lines and to put into practice the conclusions reached at the Peckham Health Centre is proposed by the Family Health Club Housing Society (Coventry) Ltd. The scheme embraces housing accommodation for a community of 2,000 families, schools, a health centre, and a farm, and plans prepared by Messrs. Arcon, chartered architects, are illustrated and described. 424

A SCHEME started in Greenwich in 1939 to provide 50 small dwellings for elderly persons and others requiring a minimum of living accommodation has now been concluded. The complete scheme is illustrated and described. 428

THE SUGGESTION that the population of the Hartlepools be transferred to the new towns of Peterlee and Aycliffe has been criticised by Mr. Max Lock, A.R.I.B.A., A.M.T.P.I., planning consultant to the Hartlepools Corporation, who states that the Hartlepools population should be stabilised, allowing natural increase to be offset by migration. 433

THE PROJECTED SCHEMES for a new concert hall and a National Theatre on the south bank of the Thames raise the question of dealing with the problems of acoustics in such buildings. In this issue are published some historical notes on Reverberation prepared by Mr. Hope Bagenal, F.R.I.B.A., the Acoustics Consultant for the South Bank Concert Hall. 434

A PROTOTYPE TRUCK for the convenient and safe handling of paving slabs and similar precast slabs used in prefabricated housing has been devised by the M.o.W. Field Test Unit, Thatched Barn, Herts. The truck is fully illustrated and described. 438

A LEGAL CORRESPONDENT draws attention to a recent County Court decision that has been upheld by the Court of Appeal. The decision holds that a price limit specified in a building licence cannot be lawfully exceeded, even though the property owner has not availed himself of the £100 licence-free quota. 439

THE ATMOSPHERIC CORROSION RESISTANCE of aluminium was one of the principal subjects dealt with by Col. W. C. Devereux, C.B.E., F.R.Ae.S., in a recent address to the Institute of Metals on "The Structural Uses of Aluminium." 440

STEPS BEING TAKEN in Scotland to assist local authorities in the allocation of tenancies with a view to achieving balanced communities have been announced by Mr. J. J. Robertson, M.P., Under-Secretary of State for Scotland. 440

SALFORD CORPORATION recently approved a proposal to build houses, schools and public buildings by direct labour. Before this decision was reached the City Engineer, Mr. W. Albert Walker, G.M., was requested by the Direct Works and Markets Committee to prepare a report on the subject. Extracts from Mr. Walker's report are given. 441

HEATING AND SERVICES FOR COTTAGES

IN our last issue we printed a summary of the recent report by the Building Research Station at Abbots Langley on various methods for providing more satisfactory heating to small houses, a continuation of the work which we reviewed on December 31 last. The experiments are combined with measures to provide improved standards of insulation from the external temperatures which are an important factor in detached or semi-detached cottages, to which latter category the tested ones belong. In making comparisons between the appropriate methods for these and for block dwellings, such insulation is a vital consideration as the area of exposure to the outer air is for the cottages at least double that for the dwelling flats, except in regard to windows, where they are about equal.

In some climates double windows are provided for winter time and with us it used to be customary for better class houses to have shutters which were closed during the night; these, though they may have been primarily a protection against breaking in, were of obvious service in maintaining the internal temperature but are no longer regarded as an economic solution of the problem, nor as a hygienic one, by reason of the fact that for most of the year people now rely on windows to give a varied measure of ventilation. The method of keeping all doors and windows closed during last year's experiments shows results more favourable than are likely during those in continuation while the cottages are occupied by tenants with normal habits.

The value of the report is somewhat diminished by its failure to provide full information as to the initial and running costs of the various equipments employed in the experiments. No estimate is offered under the first of these headings; as to the second we are given a range of from 959 therms to 2,250 therms and their equivalents as being 3½ to 7½ tons of coal, but as coal, coke, gas and electricity are employed to varying extents, the simple pricing on a coal basis does not accurately represent the fuel costs, which may range from seven to fifteen shillings per week. This would be in excess of the fuel costs of a district heating scheme to give equal results, but as in most cases the capital expenditure would be less, no valid comparison can be made on a cost basis.

It must be recognised that the economical working of the methods adopted in these experiments has been in the skilled hands of scientific observers and that it is doubtful if equal results will be obtained by the average housewife with the handicap of the many other distracting duties incidental to the management of a home and family; this difference is, however, expected to appear in the next stage of the tests and, if the actual fuel consumption costs, together with the initial costs of the plant employed, are then published, it will be possible to place a money value on the examples which have been provided, relatively to more primitive types and to alternative programmes for heating, etc.

The variety of systems which these experiments exploit give ample opportunity for comparing their relative merits. Many heat the bedroom with convected warm air, others with independent boilers and radiators; one has warm air panels, and almost every combination of solid fuel, gas and electricity is included for the

provision of main heating, cooking and hot water and with a great variety in the results, as some give incidental advantages not easily to be calculated. A sidelight on the official programme might be gained from the efforts of a central heating firm which has built two cottages at Stanmore and installed an air heating stove with a gas or solid fuel furnace and ducts to conduct the heated air through the house with provision for regulating the temperature in all the rooms. It is said to be economical and the objective is to encourage local authorities to adopt the firm's system. The information is not available as to how it compares with the convection types of the experimental series at Abbots Langley but an appreciative note in the popular Press suggests that it is a revival of the Roman system, which is not strictly accurate as the Romans warmed their one-storey houses by means of hot-air flues under the floor.

It is encouraging to find that the subject of comfort in the home of the future is receiving such close attention, and it is to be hoped that this attention will be extended to meet the very obvious demand that is to-day made by all types of housing, including both cottages and block dwellings, where the conditions differ to an extent that may turn the scale in favour for or against the programme of central or district heating as against separate installations. In America district heating has been applied to both, but here there are social and climatic differences that make the decision less capable of being regarded as a foregone conclusion.

THE CASE OF THE MISSING ASSISTANTS

SOME few weeks ago, in these columns, the architectural firm of Sir John Burnet, Tait and Partners published grades and rates of pay for architectural assistants. In doing so Mr. Gordon Tait expressed the opinion that such a step was necessary if the drift towards local government, induced by regular promotion and salary increases, was to be arrested. That opinion is endorsed by a correspondent writing in our correspondence column this week.

It might be thought from this that local government was, in the matter of architectural assistance, in clover. We pointed out at the time that this was not so, and corroboration has speedily been forthcoming in the shape of an article in *Local Government Service*, the journal of the National Association of Local Government Officers, in which it is stated that most local authorities are losing far more officers than they are appointing. A survey undertaken by the Association and covering 95 local authorities has shown that "they are losing both the young and enterprising and the experienced and highly trained. . . . In the architectural field, where the shortage of staff is most acute, a borough engineer attributes it to 'the considerable remuneration and excellent conditions' offered by private architects." The remedy suggested by our contemporary is the payment of more attractive salaries, and the proposal is made that salary scales should be brought up to 70 per cent. on pre-war figures, a figure still 15 per cent. short of the 85 per cent. addition which the recent Conference of Local Medical Committees was told required to be added to present-day salaries to maintain approximately the same standard of living as in 1939.

Where have these architectural assistants gone? Local government has not got them, nor has the private practitioner. The article quoted suggests that some have gone into nationalised services, others have gone abroad or entered the Colonial service. The problem presented, and a considerable one too, is that there is clearly a shortage of good architectural assistants, and that as a result too few men are chasing too many jobs. Many hundreds of assistants annually are spending much of their time and attention in moving from job to job in search of increased salaries; the waste of time and effort resultant on this must amount to a very great deal and be a drag and hindrance on the speed of building.

We think that there might well be further inquiry into the rates now being paid to architectural assistants, and the findings expressed in a revision of the Scale issued by the R.I.B.A. in 1945. We doubt whether any kind of planning will produce at any given time the exact number of men required to carry out the current load of work, but the present situation could be improved if, as a first step, fairer and more realistic salary scales were agreed upon by the professional bodies concerned, and local government and private practitioners were prepared to accept them when formulated. The present situation is both wasteful and absurd.

EDUCATION OF THE BUILDER'S FOREMAN

EVERY organisation, every machine, has some key post or point at which failure, should it occur, may wreck the whole concern. Few would disagree that in a constructional organisation that post is the general foreman's or, as in fact he generally is, the outside work supervisor's. A building industry without an adequate supply of good general foremen would be in a similar parlous state to an army without a proper quota of trained and experienced sergeant-majors.

It is the more curious, considering the vital nature of the foreman's job, that the building industry takes so little interest in developing and training men for these posts. Foremen are created often quite haphazardly and it says much for the quality of the men in our great industry that so few failures are recorded. The time has passed, however, when this casual approach by employers to a vital matter should be possible. Site organisation, site administration, job evaluation, industrial relations, welfare and personnel management: these are things which have developed since the war and for which training is highly necessary in the interests of the industry. To-day, as never before, the builder's foreman requires to be skilled in the technique of leadership, of supervision and of site discipline.

It is greatly to the credit of the industry that in London refresher courses in the subjects mentioned have been inaugurated in our great building schools, and that such courses will shortly be extended to cover provincial areas. But it is not enough that such courses should be in being; they must be supported by foremen—both newly-made and experienced. That support can only be real if builders will encourage their supervisory staff to attend these refresher courses, if necessary to the extent of giving them time off. The results will pay handsome dividends.

The time is opportune for the industry to consider as an urgent problem what it is going to do about training for site management and organisation. An inquiry is needed into the whole problem of general foremanship, particularly with a view to achieving a national association which can be linked with the employers' organisation. How much better that this should be done voluntarily by the industry than that it should be done by others outside it. Any broad scheme which had the industry's welfare and prosperity at heart will, we are confident, have the full support of every existing progressive foremen's association who see in it an opportunity to increase the value and improve the status of their important craft. We look forward to hearing that such an inquiry has been instituted.

NOTES AND NEWS

"The Perfect Obituary."

ROYAL Gold Medal night at the R.I.B.A. is ever a pleasant occasion, and Tuesday's ceremony in the Henry Jarvis Hall was no exception. The "galaxy of orators," as the president described them, could not have had an easier subject, of course, but the warm appreciation with which their remarks were received admirably reflected the popular esteem in which Mr. Howard Robertson is held.

It was perhaps fitting that Mr. Enthoven, who from Mr. Robertson's hand received his first "lightly-earned pound note," should be charged with the task of indicating the highlights of his former principal's colourful career. As president of the Architectural Association, Mr. Enthoven was well qualified to speak of the vision and imagination which prompted H. R., when head of the A.A. School, to concentrate on teaching the principles and "letting the students find out things for themselves."

Mr. Murray Easton, who followed, had a word to say about his partner's kindliness, adding that after the evening's important event Mr. Robertson's "proud and rather awed partners hoped he would still be of some use in the office."

After Sir Hugh Beaver had spoken in high terms of the fine work done by Mr. Robertson for the Ministry of Works during the war years, Sir Percy Thomas rounded off what Robertson afterwards described as the "perfect obituary" by saying that the Institute, in recommending "young Howard" for the Royal Gold Medal, had not only honoured the recipient but had added lustre to the award of the Medal itself.

Lamentable Lights.

THE lights go on again after nearly a decade of darkness, and in the West End of London (the lights to the fountains in Trafalgar Square being, as one would expect, out of action) enormous crowds gather in Piccadilly Circus to cheer the illuminated advertisements of bottled beer, meat extract and mineral water. We have nothing against these excellent commodities, nor do we throw stones at the enterprising firms who have secured such advantageous sites to advertise their wares. We do feel, however, that what has been called the Heart of the Empire should be more dignified and less commercial in its illuminations. The popular desire for light and colour is one that should be satisfied. Piccadilly Circus is perhaps the most supreme example of "how not to do it." What have they to say who administer the Control of Advertisements Regulations under the Town and Country Planning Act?

Lawn Cemeteries.

"LET'S talk of graves," wrote Shakespeare cheerfully, and Wimbledon Corporation seem to think that there is something in the idea, for they are inviting the views of burgesses on a proposal to provide a "lawn cemetery" on the Council's Randall's Park Estate at Leatherhead. A small exhibition in the Public Library having the rather disturbing caption: THIS CONCERNS YOU! includes a sketch plan and perspective drawing of the proposed layout, together with a model. A printed leaflet describes the lawn cemetery as having the appearance of a lawn, broken only by narrow earth plots containing memorial stones set about with flowering shrubs and plants. There are no mounds or kerbs, and the greensward is kept free from vases, jars and similar articles. It is proposed that all memorial stones shall be of natural stone or granite, and kept within certain limits of width and height, though not necessarily uniform in size or design. As soon as convenient after an interment, grass seed will be sown, or turf laid over the whole area of the grave except for a small space at the head. The top of the grave will be finished level with the adjoining ground, thus producing the appearance of a lawn.

The suggested treatment appears to be a great improvement on the normal cemetery, with its melancholy prospect of "mouldering heaps," frequently hideous headstones and general look of neglect and untidiness. It will be interesting to see how Wimbledonians react to their Corporation's well-thought-out plan for burying them in a more seemly manner.

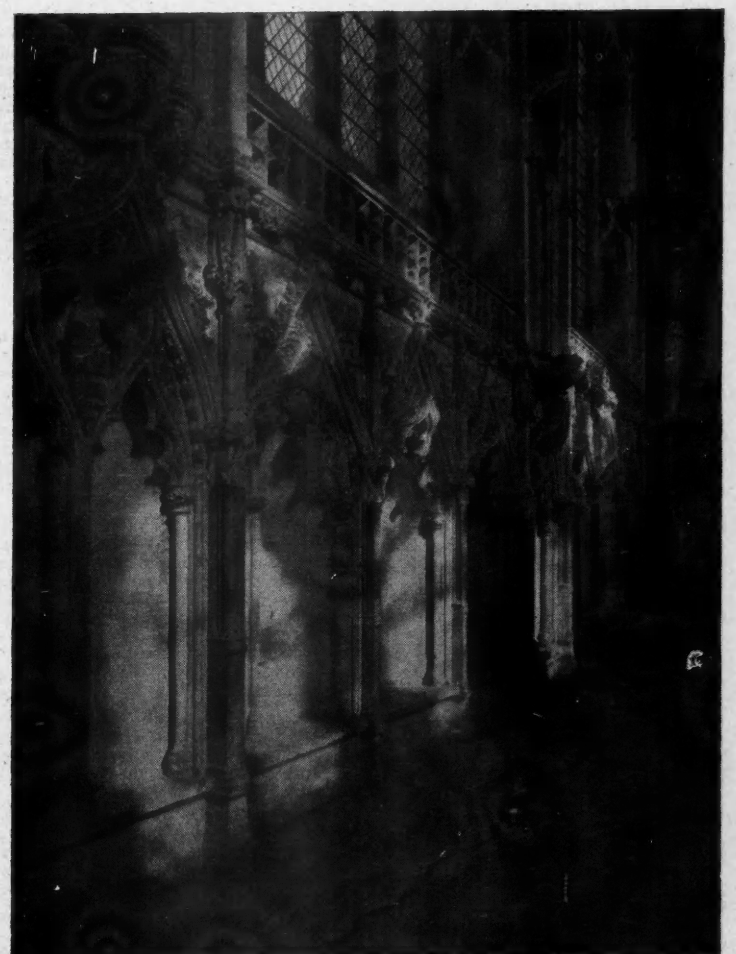
Inventors and Inventions.

THE inventive mind of man has frequently taken the wrong turning, with unexpected results. Most inventors go to work with the object of inventing something which will benefit the community at large—a serious and laudable motive. So serious in fact, that we feel, after perusing "Patent Applied For: A Century of Fantastic Inventions," by Fred Coppersmith and J. J. Lynx, that only men entirely bereft of all sense of humour (or perhaps possessed of it to an abnormal degree) could turn their minds to an invention such as the tram designed to look like a horse, which actually ran in Boston (the idea being that it would not frighten the other horse trams, as if you hadn't guessed!)

Then there was the Victorian genius who tried to ventilate a bedroom without committing the unforgivable crime of Victorian times of opening a window. This particular idea took the form of a contraption similar to a large tin trunk which fitted over the sleeper's head and led through the wall into the open air. No success attended this effort, apparently, as the first person to try it out developed a splitting headache. Such mistakes as this are hardly likely to deter your true inventor, however, as subsequent inventions noted go to show.

"Mr. Blandings. . ."

VIEWING the new film "Mr. Blandings Builds his Dream House," we marvelled at the genius of Americans in the art of caricature. Here is a film concerning the trials of two people wishing simply to "have a little place of their own." Their architect is an incredibly smooth piece of work and appears to wield a quite enviable power over their discussions. The whole of this film is infused with that touch of light comedy which used once to distinguish many films from Hollywood but which, since the war, has



ELY CATHEDRAL: The north-east wall of the Lady Chapel. From a photograph recently exhibited by Herbert Felton.

CORNISH GRANITE FOR THE SOUTH BANK. The first shipload of Cornish granite for the new wall of the South Bank of the Thames has arrived in London and is shown being unloaded from the m.s. "Aseity."

become rare. In "Mr. Blandings" it is with us again and although it is difficult to imagine any practising architect quite as the one portrayed by Mr. Reginald Denny, in terms of the American scene there certainly seems to be more over there than is thought of in an English architect's philosophy. However, if it is relaxation from the frequently humourless procedure of building that is needed "Mr. Blandings Builds his Dream House" is recommended.

Mr. Edward Maufe.

His friends and the many who admire his work will learn with regret that Mr. Edward Maufe is at present in a nursing home following an operation to his right ear. This follows an accident some years ago when he fell from his horse. In a characteristic letter, Mr. Maufe writes: "Six months ago I was appointed consulting architect to the College of Surgeons, and now they have my ear in their museum. A bit quick, that! Webb Johnstone (the surgeon) tells me that he has assured his Council that he has the ear of their architect. Four R.A. sculptors have offered to make me a new ear!" We wish Mr. Maufe a speedy and complete recovery; he is an architect who cannot be spared.

New I.A.A.S. President.

The Council of the Incorporated Association of Architects and Surveyors has elected Mr. Charles H. Taylor, senior partner in the firms of Messrs. Taylor and Smith, Lincoln's Inn, and Messrs. Hogg and Keay, Belfast, as president, and Mr. Hurley Robinson, F.R.I.B.A., of Birmingham, as chairman of the Council of the Association. Mr. A. E. Mander, L.R.I.B.A., is vice-chairman.

Short List at Birkenhead.

Ten applicants for the post of Borough Architect, a new position created in Birkenhead Corporation, are to be interviewed next month, and it is expected that the final choice will be made then. The new position carries a salary of £1,250 rising by £100 increments to £1,450 in two years.

The ten selected for interview in May are:—T. P. Rae, Housing Director, Bolton; C. Bacon, Borough Architect, Taunton; S. M. Richmond, Borough Architect, West Hartlepool; J. V. Quarmby, City Architect, Portsmouth; J. W. Adamson, City Housing Architect, Belfast; John Hamnett, Chief Assistant Architect, Manchester; H. S. Gardiner, Assistant Borough Architect, Twickenham; A. Crichton, acting Principal Architect, Liverpool; M. N. Brook, Director of Housing, Morley; and J. Blackburn, Borough Architect and Planning Director, Inverness.

Coal Board Post Vacant.

Applications are being invited for the post of Divisional Chief Architect to the South-Western Division of the National Coal Board, Cardiff. The salary is £1,200 to £1,900 per annum according to qualifications. Applications should be addressed by April 23 to the Establishment Officer of the Division, Cambrian Buildings, Mount Stuart-square, Cardiff.

A Vacant Post at Gateshead.

Gateshead Corporation invites applications for the appointment of Borough Engineer, Surveyor and Town Planning Officer. The commencing salary is £1,750, rising by annual increments of £50 to £2,000. Applications should be made by May 18.

Appointments.

Mr. J. A. Maudsley, A.R.I.B.A., chief architectural assistant, Hornsey Borough Council, has been appointed Deputy County Architect to the West Suffolk County Council.

Mr. W. P. Clayton, A.R.I.B.A., chief assistant architect to the West Bromwich Corporation, has been recommended for the post of borough architect of Wallasey at a salary of £1,400.

Professional Announcements.

Mr. Ernest J. Thomas, F.R.I.B.A., F.R.I.C.S., M.I.Struct.E., chartered architect and surveyor, of Coronation House, Kings-terrace, Portsmouth, has taken into partnership Mr. George J. Jolly, F.R.I.B.A., A.I.A.A., chartered architect, and Mr. R. G. Grant, A.R.I.C.S., chartered quantity surveyor, and the firm will continue to practise at the above address and at Gosport as Messrs. Ernest J. Thomas, Jolly and Grant, architects and surveyors.

Messrs. Lay and Partners, quantity surveyors, state that as from Monday, April 11, their London address will be 8, Clarges-street, Piccadilly, W.1 (tel.: Grosvenor 3833), where trade catalogues, etc., will be welcomed. The Manchester office will continue at 41, South King-street, Manchester 2.

Mr. F. C. Williams, quantity surveyor, who has returned from overseas, has started practising at 338, Cyncoed-road, Cardiff, and would be glad to receive catalogues, etc.

COMPETITION NEWS

A Community Centre.

On the recommendation of the Reconstruction Committee, the Council of the Incorporated Association of Architects and Surveyors have agreed to hold an open competition for designs for a community centre. The rules and conditions of the competition, together with the closing date for receipt of entries, will be announced at an early date.

COMING EVENTS

Tuesday, April 12.

Royal Institute of British Architects (Architectural Science Board).—"Microclimatology—Local Variations of Climate Likely to Affect the Design and Siting of Buildings," by Mr. G. Manley, M.A., M.Sc. 66, Portland-place, W.1. 6 p.m.

The Housing Centre.—"Holiday Resorts and Accommodation," by Mr. Clough Williams-Ellis, F.R.I.B.A., M.T.P.I. 13, Suffolk-street, S.W.1. 1.15 p.m.

Royal Society of Arts.—"Colonial Development," by Sir Frank Stockdale, G.C.M.G., C.B.E. John Adam-street, W.C.2. 2.30 p.m.

The Illuminating Engineering Society.—"The Manufacture of Lighting Glass," by J. G. Holmes, and "The Manufacture of Metal Parts for Lighting Fittings," by P. Hartill. London School of Hygiene and Tropical Medicine, Keppel-street, London, W.C.1. 6 p.m.

Thursday, April 14.

The Institute of Welding.—A.G.M. Polytechnic, Regent-street, W.1.

FROM "THE BUILDER" OF 1849

Saturday, April 7, 1849.

From the letters received during the past week (such a varied budget that to reply to them satisfactorily would demand an encyclopædic mind, and half a dozen pairs of hands), we select for notice those on two or three subjects of more immediate interest. Prominent amongst these are a pile with reference to our brief remark on galvanized tinned iron, in a recent number. As we have before now said, we might commend a man or a material every week for a year, and never extort a single acknowledgment from him or its owner—they stand too well to care for or need the praise of so small a thunderer—it is simply their due; they *have* merit, and no thanks to them who observe and admit it. On the other hand, if we but question ever so slightly the infallibility of the man, or express a doubt as to the pre-eminent goodness of the material, a shower of letters forthwith arrives to prove that although our good opinion is worth nothing, our bad opinion is very differently estimated.—(*From a leader.*)

ECONOMICS OF HEATING SMALL HOUSES

SOME NOTES ON CURRENT EXPERIENCE

By S. F. NEWCOMBE

THE main object of a house is to provide "human comfort" (weather protection and warmth) at the least total cost over a period of years.

These notes therefore apply to "human comfort" in rooms from 1,000 to 1,800 cu. ft. with wall surfaces of some 300 to 450 sq. ft. in the normal small house of 920 sq. ft. in the South of England, and cost of fuel in heating appliances for a period of 25 years: after that time, to-day's heating appliances will be out-dated or worn out: the structure of the house may last for 100 years or more. To heat the house, unless it adds to human comfort, is clearly waste of fuel and money.

Human comfort is a physiological relation between (*a*) air temperature (T° dry bulb); (*b*) Humidity (T° wet bulb); (*c*) Radiant T° from or to the body to or from surroundings; and (*d*) air movement (ventilation, draughts, wind). Inside the house, (*b*) humidity at low T° does not sensibly affect comfort, if we omit dampness; and similarly (*d*) since air is almost still, if draughts and excessive ventilation are avoided. So (*a*) air T° and (*c*) radiant T° are the two main factors concerned.

The body maintains a constant T° of 98.6° F. of the blood, the T° of the skin surface varying in different parts of the body and conditions. Body metabolism, the oxidation of body tissue to furnish B.Th.Units of heat energy, varies in its rate from 240 B.Th.U. per hour when asleep to 400 B.Th.U. at rest, about 800 to 1,400 walking, and perhaps 2,500 with violent exercise. For comfort indoors, one assumes the person to be at rest and to emit 400 B.Th.U. per hour, of which about 80 B.Th.U. are lost by (*b*) evaporation and breathing and 160 B.Th.U. by each of (*a*) air contact or convection and (*c*) radiation to surroundings.

M (Metabolism) = E (Evaporation) + C (Convection) + R (Radiation).

E, C and R can vary to balance M.

Charts of comfort zones are drawn up in which definite temperatures are specified as desirable or even essential. But "comfort" is now being defined as where "the sensations of discomfort are missing"—a very wide term, varying with persons, health, age and many factors. A given equivalent T° of air and radiant heat does not comply with such a definition and, above all, most of us prefer to put up with slight discomfort for occasional short periods than to pay the rather high cost of fuel, appliances and labour needed to maintain our rooms at certain temperatures when they may be empty for hours or days.

Need for Flexibility.

Everyone's experience shows that one feels differently in early morning than at mid-day or evening, and often one goes from a warm room to a cold outer air to feel greater comfort, not less. We cannot explain why our views and feelings change daily and with age. We do want, therefore, to heat our rooms as and when required, with great flexibility, to meet our own very changeable wishes and to allow for entirely different occupants who may follow.

Meteorological office records show that during December and January the mean daily sunshine at Kew is about 1¼ hours, and spells of cold weather rarely last for more than 7 days at a time in December, January and February, and that the T° of outside air between 30° and 40° is about 7 weeks in the year.

Really cold spells are rare. The accepted T° difference of 60° inside and 30° outside air, used in formulae, is very doubtful for occupants using heat intermittently in a small house, though it may work roughly as a means for continuous heating. But the T° inside the house rarely falls below 42° F., due to heat storage of waste heat from cooking, h.w. supply and ground T°: at 4 ft. and 10 ft. below ground, the T° in January and July is 50° F., rising to 56° and 53° in September, and falling to 44° and 47°, respectively, in March. Hence, 4 ft. and 10 ft. inside the house, the T° below the floor would be roughly 50°. The T° of the cave at Torquay remains at 52° throughout the year.

With high heat storage inside the house and high insulation of external walls and ceilings, the air T° may in some cases drop to about 42° F. for short periods, but can be heated up in a few minutes if the wall surfaces are correctly designed and appliances well selected and sited. Background heating is not worth paying for, in fuel and appliances, for the rare cases in which it prevents discomfort.

The diagram of a small house implies a frame construction, with external walls of any weatherproof surface—glass, brick or concrete—and inner lining of walls and ceiling of 2 in. mineral wool (k = 0.28 B.Th.U.) and ¼ in. air space, and inside surface aluminium foil (.004 in.), ½ lb. per sq. yd. (or plasterboard, hardboard, 3-ply, etc., with thin foil towards the air space for conventional appearance).

Insulation in Ceilings.

The conductance of this inner lining is about 0.12 B.Th.U. and heat capacity 0.5 B.Th.U. per sq. ft., the foil making it damp and vapour proof. A heat input of 10,000 B.Th.U. (3 k.w.h.) in a room of 1,500 cu. ft. for 5 or 10 minutes would raise the surface T° and of the air by 20° F. or so, and then permit the heat input to be reduced to 6,000 or 3,000 B.Th.U. (2 or 1 k.w.h.) The pitched roof should be weatherproof, but it is wasting money to insulate it. All insulation should be in the ceiling.

This house need cost no more than those now being tested, is much better insulated and could have the same appearance. The M.O.W. heat unit, if load bearing, would reduce the cost of framed construction.

The M.O.W. unit, with a solid fuel heating appliance, would supply hot water and perhaps cooking, and its waste heat would go into heat storage of water in lagged cylinder. Probably the radiant heat of the openable firebox would suffice on most occasions to heat the living-room, especially if it were highly lagged, and would ensure a speedy rise in rate of combustion from ¼ lb. to 2 or 3 lb. per hour. Gas or electric radiators would be needed on occasion but not often.

The best solid fuel appliances burn about ¼ lb. per hour as minimum, *i.e.*, 3 tons per annum. For a small house, this consumption can only be continuous for short periods in winter, and for most of the year the appliance must be intermittent, and only one appliance be used, combined with heat storage of waste B.Th.U. and semi-portable radiant heaters.

Heat can be stored in lagged h.w. cisterns, in brick or concrete walls or in metal; heat capacity in B.Th.U. per cu. ft. is as follows: water, 62½; iron, 57; concrete (heavy), 40, (light), 20; and brick, 21. Obviously, water is the best heat store, because it can be lagged, and a ¾ in. diam. water pipe conveys as much heat as a 12 in. by 12 in. air duct, which takes 150 times the space. Thus the B.Th.U. can be used more easily where and when needed.

RADIANT HEATERS should be sited to radiate where people sit and not to a window through which most of the B.Th.U. would be conducted through the cold glass, nor beneath a chimney, creating a draught along the floor which would convey B.Th.U. up the flue.

REFLECTORS should be used to direct all B.Th.U. to the floor or persons, not conveyed by air currents unused to the ceiling and windows. The air can pick them up from the floor in due time.

Aluminium foil (from 33 sq. yds. to 1 sq. yd. per lb.) is the only economic material which reflects infra-red radiation as well as solar heat. It could be applied over and behind h.w. "radiators," fixed to external walls, and over all radiant appliances, unit heaters and even tungsten bulbs, which emit some 300 B.Th.U. per watt. Much heat goes direct to ceilings from electric lights which could be employed: and foil on ceilings would reflect such heat, diffuse the light and be vapour proof. Pierce Foundation tests indicated a large saving of fuel by its use in ceilings. Foil of suitable thickness can be used for shutters, screens, under chairs, tables, desks, etc., reflecting radiation from the body or throwing B.Th.U. from low-watt electric heaters at the body. Curtains or blinds could be made with low-cost fabric and surfaced with foil and would thus retain heat in the room at night. Foil could especially be used with skylights and north lights which sometimes can reflect solar heat into a room by day, or, in hot countries, prevent its entry.

Pierce Foundation tests prove that people feel uncomfortably warm with T° air at 50° F., if the wall surfaces are above 90° F., and that with air at 120° F. and walls about 30°, they feel comfortably cool. Where aesthetics or convention permit, foil on surfaces is helpful; and it is cheaper to heat wall surfaces by radiation than air by convection.

In fact, we use the terms radiation, convection, etc., loosely. B.Th.Units of energy or heat are radiated through space, conducted by contact or consumed in converting solids to liquids and to gases as latent heat; air in contact with surfaces then conveys these units and raises T° air. Hence, one feels comfortable in dry still air at 20° F. if in strong sun's radiant heat, or one feels 10° to 20° warmer in the direct sun than in the shade; one uses the B.Th.U. directly on arrival, before the air takes them for convection.

An input of 10,000 B.Th.U. (3 k.w.h.) into a room of 1,500 cu. ft. will raise T° of inner surfaces, if of foil or very low heat capacity, by 20° in 5 or 10 minutes. The input can then be reduced to 3,000 or 6,000 B.Th.U., and the person be comfortable. Two or more persons require less heat in a room than one for the same degree of comfort.

The occupancy of rooms and personal needs are so very variable that such means of heating may prove to be much cheaper than by central heating and open fires, especially in small houses. An input of 10,000 B.Th.U. dispersed within an angle of 150° gives in B.Th.U. per sq. ft. per hour (*a*) 125 at 3 ft., (*b*) 50 at 6 ft., and (*c*) 30 at 9 ft. distance from the fire. A normal person has about 20 sq. ft. of surface.

LATENT HEAT has been neglected. Dampproofness of insulation is essential ; dampness may reduce insulating values by 50 per cent., and to convert 1 lb. of water into vapour at 60° absorbs 1,060 B.Th.U., about double the heat to raise 1,500 cu. ft. air by 20°. A film of water 1/2,000th in. thick on 400 sq. ft. of walls weighs about 1 lb.

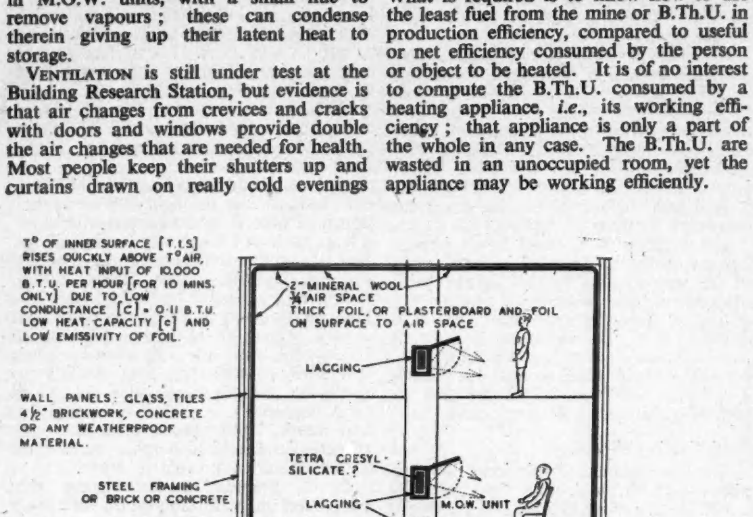
Dampness caused by poor design or construction or by inadequate maintenance often causes discomfort or excessive radiation from the body to a wall, cooled by evaporation of dampness. One faulty tie or porous stone across an air space has often made that space useless.

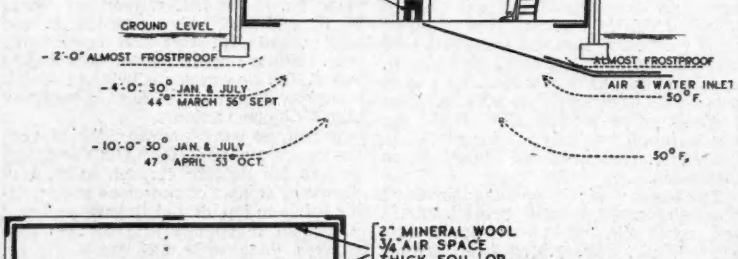
CONDENSATION from cooking, baths, etc., is normally harmless and cannot be prevented on windows, or on tiled walls in kitchens and bathrooms. It can be reduced by using a closeable hot plate, as in M.O.W. units, with a small flue to remove vapours ; these can condense therein giving up their latent heat to storage.

VENTILATION is still under test at the Building Research Station, but evidence is that air changes from crevices and cracks with doors and windows provide double the air changes that are needed for health. Most people keep their shutters up and curtains drawn on really cold evenings without going sick ; and it is better to open windows wide for a short time at mid-day (when humidity is lower and T° higher) than to keep them partly open for a long time causing draughts and heat loss. Draughts on one part of the body (head or feet or neck) may cause more discomfort than a wide-open door and window. A draughty, damp passage feels much worse than cold air.

WINDOWS, open or shut, clearly lose heat, but in winter they are usually curtained for some 16 hours in a living-room, reducing heat loss. The cost of double-glazed windows is far too high to be justified, except where air conditioning is used, and where the differences between T° outside and T° inside air are very high for long periods.

HEAT EFFICIENCY is a misleading term. What is required is to know how to use the least fuel from the mine or B.Th.U. in production efficiency, compared to useful or net efficiency consumed by the person or object to be heated. It is of no interest to compute the B.Th.U. consumed by a heating appliance, *i.e.*, its working efficiency ; that appliance is only a part of the whole in any case. The B.Th.U. are wasted in an unoccupied room, yet the appliance may be working efficiently.


T° OF INNER SURFACE [T.I.S] RISES QUICKLY ABOVE T°AIR, WITH HEAT INPUT OF 10,000 B.T.U. PER HOUR [FOR 10 MINS. ONLY] DUE TO LOW CONDUCTANCE [C] = 0·11 B.T.U. LOW HEAT CAPACITY [c] AND LOW EMISSIVITY OF FOIL.
2" MINERAL WOOL
¾" AIR SPACE
THICK FOIL OR PLASTERBOARD AND FOIL ON SURFACE TO AIR SPACE
LAGGING
WALL PANELS: GLASS, TILES 4½" BRICKWORK, CONCRETE OR ANY WEATHERPROOF MATERIAL.
TETRA CRESYL SILICATE ?
STEEL FRAMING OR BRICK OR CONCRETE
LAGGING
M.O.W. UNIT
GROUND LEVEL
- 2'-0" ALMOST FROSTPROOF
ALMOST FROSTPROOF
AIR & WATER INLET 50° F.
- 4'-0" 50° JAN. & JULY 44° MARCH 56° SEPT
- 10'-0" 50° JAN. & JULY 47° APRIL 53° OCT.
50° F.


2" MINERAL WOOL
¾" AIR SPACE
THICK FOIL, OR HARDBOARD, PLASTERBOARD ETC., WITH FOIL, THIN, TOWARDS AIR SPACE.
INSULATION: VAPOUR PROOF
HEAT STORAGE
HEAT STORAGE
LAGGING
CONDUCTANCE [C] = 0·11 B.T.U. DENSITY MINERAL WOOL 6 LBS. CUBIC FOOT
HEAT CAPACITY < 0·15 B.T.U. PER SQ. FT. PER 1" THICK.
HEAT CAPACITY OF WATER IN B.T.U. CUBIC FT. 62·5
" " " IRON 57·0
" " " CONCRETE [HEAVY] 36·0
CONCRETE [LIGHT] 12·15
" " " BRICK 22·0
STEEL FRAMING TO SUPPORT WALLS OR BRICK OR CONCRETE

BACKGROUND HEATING : AMPLE FROM WASTE HEAT OF COOKING, HOT WATER SUPPLY AND GROUND.

PERSONAL WARMING : [INTERMITTENT] FROM HEAT STORAGE AND SUITABLE APPLIANCES WELL SITED.
HIGH HEAT INPUT [ABOUT 10,000 B.T.U. PER HOUR] FOR 5 OR 10 MINS., THEN CUT OFF OR REDUCE TO 3,000 B.T.U.

Diagrammatic plan and section of suggested test dwelling at Abbots Langley.

COSTS OF HEATING in B.Th.U. *ex* mine compared to costs of B.Th.U. actually consumed in human comfort must clearly be only averages with so many variables and wide margins of error. Some 60 m. tons of fuel *ex* mine were used pre-war in 12 m. houses ; 5 tons per house. We should try to use 45 m. tons or 3¾ tons *ex* mine per house, yet increase pre-war comfort, and use the 15 m. tons to improve living standards in buying food and other needs.

Coal, 12,500 C.V., takes 8 lb. per therm gross at the mine.

Gas, 200 cu. ft. per therm, 15 to 16 lb.

Electricity (3,416 B.Th.U.) or 40 lb. per therm.

	Therm.	*Working Efficiency. Per cent.*
Coal at 91s. per ton (12,500 C.V.) costs	3.9d.	100.0
Coke at 110s. per ton (15,000 C.V.) costs	3.9d.	100.0
Anthracite at 123s. 9d. per ton (15,000 C.V.) costs	3.9d.	112.5
Gas—domestic small user—costs	1/3	100.0
Electricity at 1d. per unit costs	2/6	100.0
Electricity at 1¼d. per unit costs	50d.	100.0

Yet electric radiant heating, for ½ to 1 hour, may be cheaper than solid fuel, due to the time needed to burn fuel and the varying net efficiency to the person.

The American magazine *Fortune*, for September, 1948, states that 20 m. out of nearly 40 m. dwelling units will pay for 75 per cent. of the U.S.A. fuel bill of £870 m., and that central heating of these dwelling units is far too much compared with the heat required by the person.

Architectural Forum published results (November, 1948) of John Pierce Foundation. The chapters on Heat, Light, Sound, Houses, etc., take "human comfort" as the basis, not house heating. At first sight their results seem more likely to lead to progress in comfort and building with economy than the Building Research tests which seem to put house heating as the objective.

The formulae adopted—1, U values ; 2, efficiency of the appliance ; 3, continuous burning ; 4, constant difference of air T° inside and outside—may give rough results for hotels, hospitals, etc., where large furnaces are justified, but they cannot apply to personal comfort in small houses because (*a*) the ¾ lb. per hour fuel consumption in the fire-box (3 tons per annum) is, at present, the lowest rate of combustion ; central heating may be economical for a hotel but it is not *proven* for a small house ; (*b*) U values do not apply to radiant heat ; (*c*) true efficiency, if it were possible to measure, concerns the *net* use of heat to the person, not "working efficiency" of the appliance ; (*d*) Dr. Bedford's study, "The Warmth Factor," and later studies give optimum measures of comfort in factories or in special cases where people are asked what they think to be "comfort" but not to be provided at their own expense ; (*e*) occupants in houses over a 25-year period change their own habits, or the personnel alter their needs very widely ; (*f*) probably most occupants would put up with very minor discomfort for a few minutes in short spells of extreme weather if they could save a ton or more of coal per annum to be spent on other needs. (One ton per house per annum means 12 million tons nationally.)

A Practical Test.

A test on a house at Abbots Langley is suggested, the insulation provided to be inner linings to external walls and ceiling with the lowest conductance and heat capacity value ; 2 in. mineral wool below 10 lb. density ; damp-proof from

outer damp; and an air space, inner surface lined with aluminium foil, .004 in. thick, S.W.G. 42 (or a hardboard, 3-ply, plaster board, etc., with foil facing the air space). This would provide a conductance value of about 0.11 B.Th.U. at reasonable cost. Heat storage should take as much as possible of waste B.Th.U. from M.O.W. or other heating appliance; and there should be semi-portable gas or electric radiators for a quick heat input.

The T° of inner surfaces of walls and other surfaces will be raised more quickly than the present insulation permits, and the occupant will be warmed to his needs also more quickly. Heating the person will then take only 2 or 3 minutes, nearly as quickly as lighting the room.

Will he get the comfort he is satisfied with at least cost in fuel? And will the method be more flexible and the B.Th.U. more under his control than the results so far obtained show? It is hoped that light may be thrown by the experiment which may lead to partial central heating or to different appliances, the intention being to try every method to "save coal, yet increase comfort."

"NEWER SARUM": Dr. Sharp's Plan for Salisbury

WHEN in the year 1220, the bishop and the burgesses decided to come down from the windy and almost waterless hilltop and found a new city in the water meadows to the south, they left a site which had been occupied for at least fifteen hundred years by Celts, Romans, Britons, Saxons, Danes and Normans. New Sarum was then built in its place as one of the first English towns to be laid out on a deliberate plan. The transfer was a success and Salisbury became a prosperous market centre as well as the capital city for Wiltshire, its claims being reinforced by the convenience of its situation and the beauty of its Cathedral.

Up to some 50 years ago no very marked changes in the character of the city were demanded, not even the railway having seriously affected the pattern of its organisation, but since then events and conditions have been making an increasingly intensive call for reorganisation and replanning. This call has brought in Dr. Thomas Sharp as town planning consultant, who has now presented his plan, in book form,* to the Salisbury City Council. In reviewing the problem confronting him, Dr. Sharp points out that it is a singularly difficult one to solve; the city offers the planner no help in all the closely built-up inner area, and there are no slack places where he can put up his new public buildings.

The population of Salisbury had been gradually increasing between 1921 and 1939, but as a reception area in the early years of the last war it rose from about 28,650 to 37,000; at present it is estimated at 30,760. Before the war the standard of housing was well above that of the country as a whole; since then it has deteriorated somewhat, but not to the same extent as elsewhere. There is an exceptional number of fine large houses, there are also pleasant residential districts, but at the same time, in some areas housing conditions are neither pleasant nor reasonably up to date, including an admixture of small industrial premises among which the older dwellings barely maintain a cramped and precarious existence. At a conservative estimate there are at least four or five hundred houses that need to be replaced at an early date.

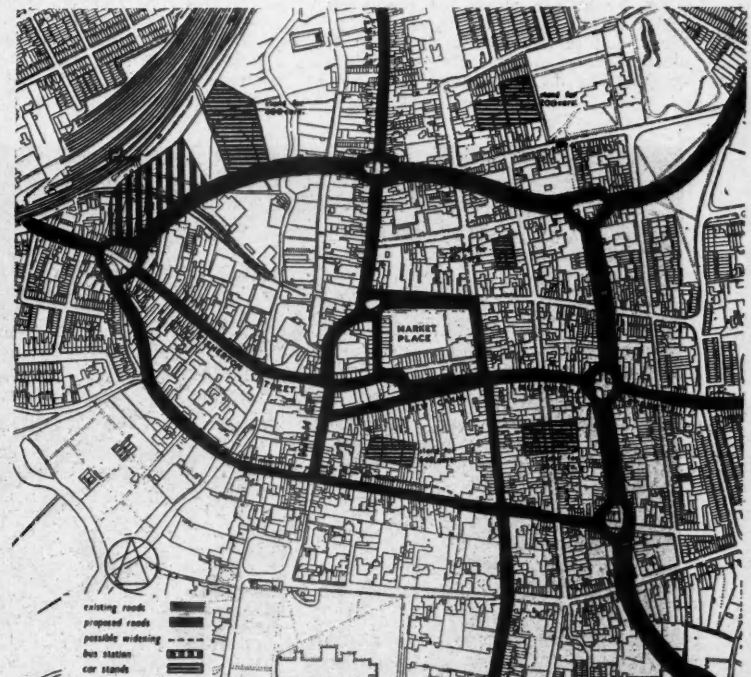
Manufacturing takes a minor place in Salisbury's economy and, but for some works established during the war, would be of even less importance, the main activities being due to the city's position as an administrative and business centre. The extent of its sphere of influence is limited to the south-east and south by the competition of Southampton and Bournemouth, and to the north Salisbury Plain offers an effective barrier, but it is an accessible centre and a natural focus for the valleys of the Bourne, the Avon, and the Nadder which meet at this point. The only factor detracting from its present usefulness as a market centre is the inadequacy of its streets and open spaces to the demands of traffic as now operated.

Salisbury ranks high among the tourist centres of England; the cathedral and its exceptionally pleasant setting draw visitors from all parts of the world. The city and its environs, including Old Sarum and Stonehenge, have most of the historical attractions that the tourist generally seeks. The development of the tourist trade is a very proper, and profitable, undertaking; at the same time, it is unlikely that it may become what over-dependence on the tourist is apt to produce—the half-dead museum piece—though it has tended to succumb to one aspect of such a fate in that new buildings have often been given a fancy dress based on a selection from what was typical of the various periods in the city's past history. Developments can very well aim at amenities of equal value to the tourist, to the general visitors, and to the inhabitants of the city.

In any plans for remodelling, it has to be recognised that Salisbury is primarily a market town, and that its other functions include only a very small proportion of industrial operations. It might be desirable to increase the latter somewhat to provide a better balance in the employment structure, but it is emphasised as important that such acquisitions should be of a size and kind in proportion to the character of the city. The war brought in some 2,000 additional workers, but it is unlikely that these will all remain and it would be preferable that those who do should operate in smaller groups. The basis of planning might be for the city to remain much as it is to-day; a little larger, with a more diversified employment structure, and with living conditions improved, but with no drastic change in its traditional functions.

Coming to the actual proposals embodied in the report, the dominant one is the improvement of the road system, comprising a ring route around the business area with connections outwards to the east and south and a link-up with the railway station. The alignment of this route on the west seems incapable of improvement, but that east of High-street and Castle-street is a more dubious selection; several alternatives offer themselves to this part of the plan which might be worth a comparative analysis with that illustrated, from the points of view both of economy and of harmony with present street design. Two short routes near the Market Place give good value for traffic. An important demand is that for adequate parking of public and private vehicles, and the provisions for this are carefully studied in the plan.

The choice of positions for parks and recreation grounds and their relation to the populated areas has received due attention. The large park to the north



PLAN FOR SALISBURY. Road proposals in the central area.

* "Newer Sarum." A plan for Salisbury by Thomas Sharp. Published for the Salisbury City Council by the Architectural Press, London. Quarto. 10s.

is extended to include the site of Old Sarum, and areas are reserved to provide for all the recent suburban extensions of the city. The banks of the rivers are treated as parkways, those of the Avon extending along the west of the central city with special treatment around the old mill. In this case the only doubt to be expressed is in regard to the deprivation of the water frontages of the fine houses in the Cathedral Close, which is a great asset to them and, provided the west bank of the river is open to the public, not an equivalent one to the latter. A total of some 320 acres is suggested as public open space in addition to the existing 100 acres. Some further 200 acres will be needed for school playing-fields and there will be various private playing-fields in addition.

The plan of Salisbury has already taken the form of a central area with suburban groups on three sides; Bemerton on the west is separated off by the railway and the River Avon, East and West Harnham by the Cathedral Close and the Avon just outside it on the south, and Laverstock by the railway and the Bourne on the east. These may all three be regarded as appropriate for receiving a measure of neighbourhood planning and each is provided with such public services and amenities as shops, schools, churches, playing-fields, community centre, etc. Neighbourhood planning is obviously more urgent in the greater towns and normally on a larger scale than in this case, but the degree of detachment that occurs here justifies the adoption of the system with suitable qualifications.

Dr. Sharp points out that it is undesirable that future buildings in Salisbury should exceed three storeys in height so as to preserve the dominant effect of the Cathedral in the various street views. He closes his report by asking that it should be regarded as no more than a framework upon which others will bring the new works into being, giving the city renewed life.

H. V. L.

COMMUNITY HOUSING SCHEME AT BRANDON WOOD, COVENTRY

ARCON, CHARTERED ARCHITECTS

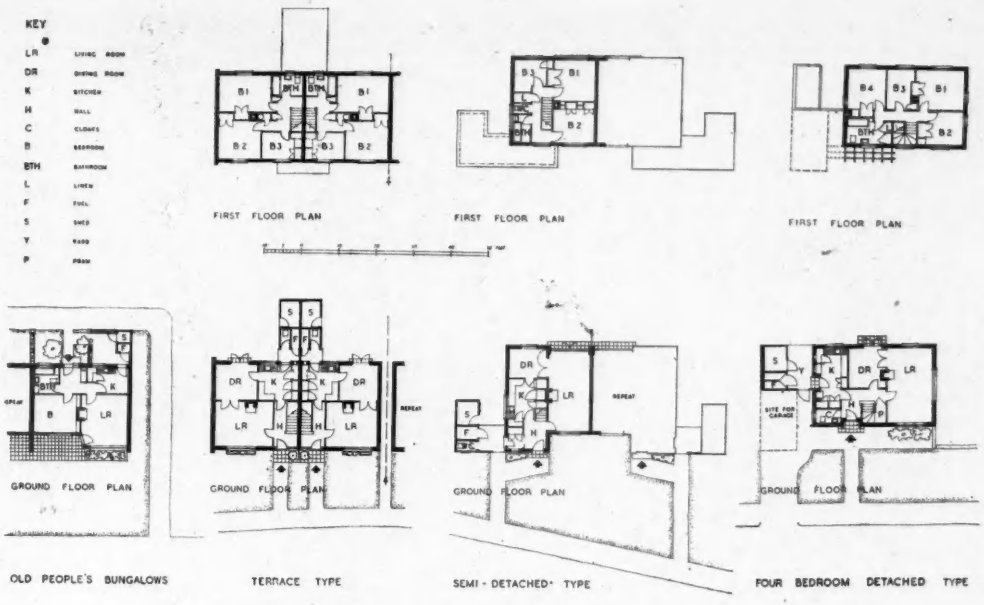
PLANS and photographs reproduced illustrate the building proposals of the housing society known as the Family Health Club Housing Society (Coventry), Limited, on a piece of land of approximately 450 acres in extent just outside the city boundary of Coventry. The Society was founded when the war was at its height, with the object of establishing a new community to be run on "positive health" lines, and to put into practice the conclusions reached at the Peckham Health Centre as a result of 25 years' intensive study on the principles of "positive health."

The Society's building problem is that of creating sufficient housing accommodation for a community of 2,000 families. The community will be drawn proportionately from all income groups, and will be housed in detached, semi-detached or terrace houses, or in flats. The built-up area will be surrounded on three sides by a farm strip, the running of which will form part of the Housing Society's activities in order to provide members of the Society with fresh dairy and market gardening produce. There will be a central area where a shopping centre, church, administrative buildings, car park and cinema have been planned, and, in addition, shopping facilities will be provided at various appropriate points throughout the estate for such day-to-day necessities as are usually provided by the "corner shop."

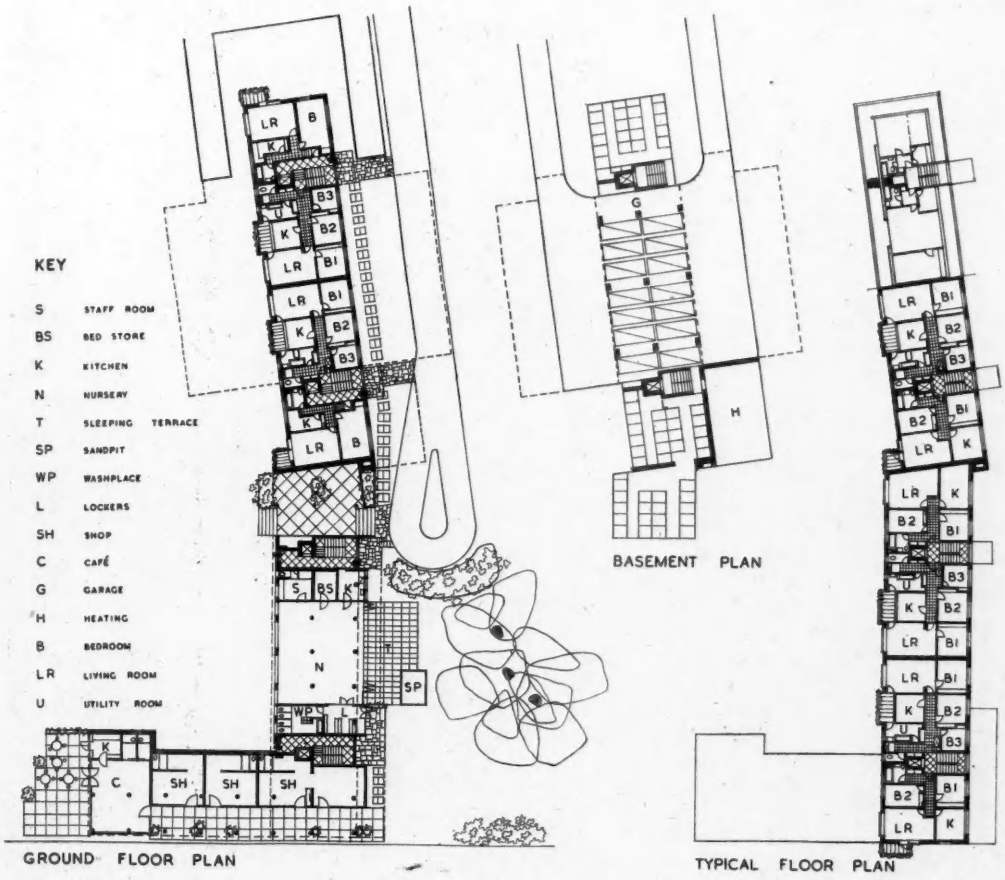
TOWN PLANNING.—The general town planning layout has been developed in conjunction with the County and City Planning Authorities. First priority has been given to the establishment of the farm belt, and over 250 acres have been allotted for farming use. On the north side of the Brandon Wood-road the land is undulating, and a free and informal layout has been adopted. To the south, however, where a considerable amount of uncontrolled, sporadic development has already taken place on a formal gridded plan, the layout has had to take into account this existing grid.

ROADS AND TRANSPORT.—The guiding principle as regards road layout has been that all traffic should be canalised into a main ring road. A fly-over has been arranged where the main north-south road of the estate crosses the Coventry-Rugby road. A project of this size considerably affects the transport arrangements of the local area, and special transport

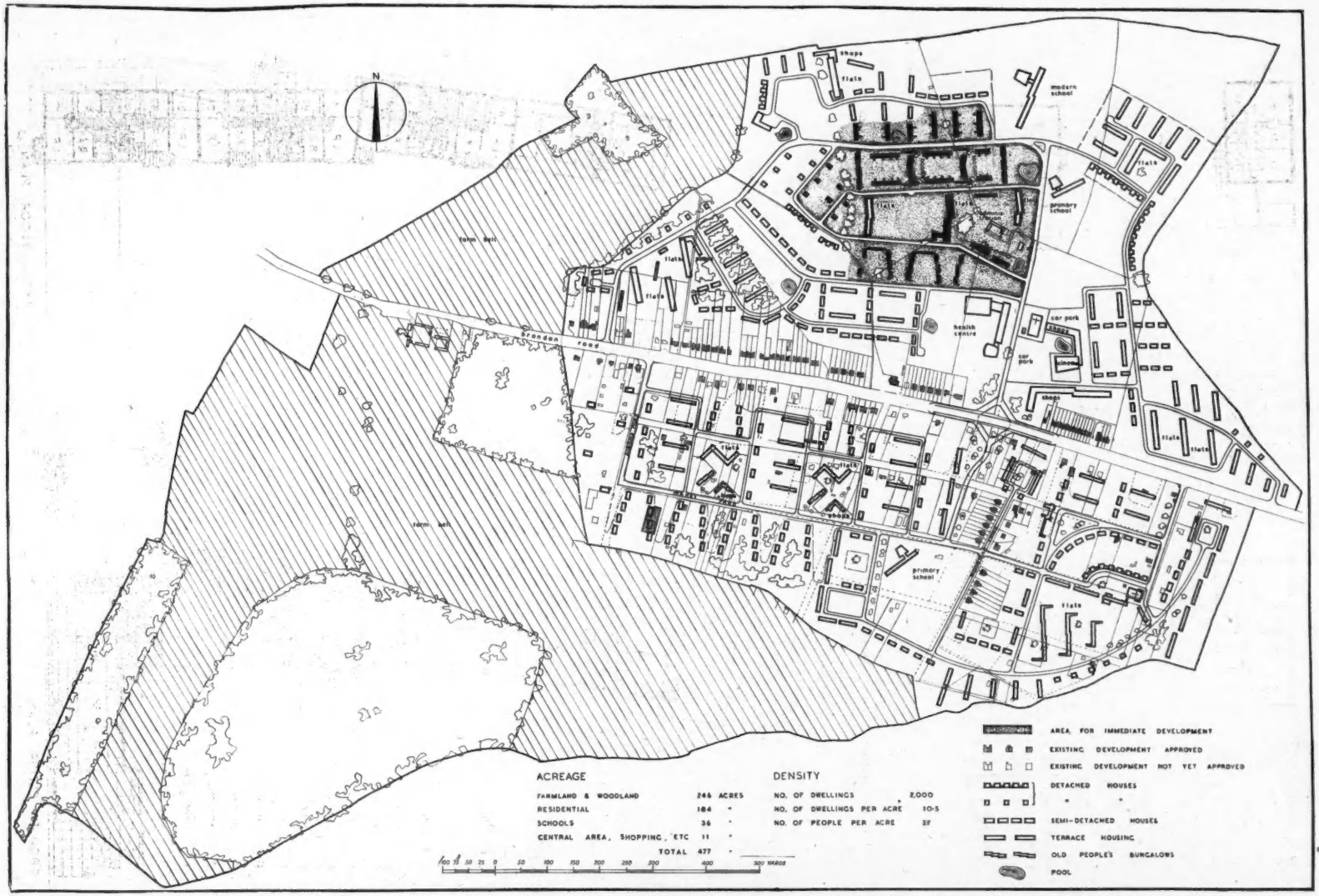
BRANDON WOOD COMMUNITY, COVENTRY. The first section as proposed to be built.



Plans of typical houses.



BRANDON WOOD COMMUNITY, COVENTRY. Plans of the flat blocks.



BRANDON WOOD COMMUNITY, COVENTRY. Layout of entire scheme showing (stippled) the first section proposed to be built.

arrangements to and from Coventry are being negotiated.

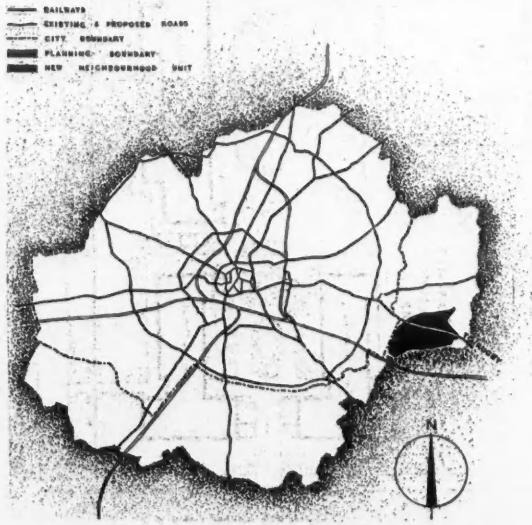
arrangements to and from Coventry are being negotiated.

SCHOOLS.—In conjunction with the County Education Authority, one secondary and two primary schools have been sited in the Society's development proposals, and the appropriate areas for playing fields and recreation have been allotted.

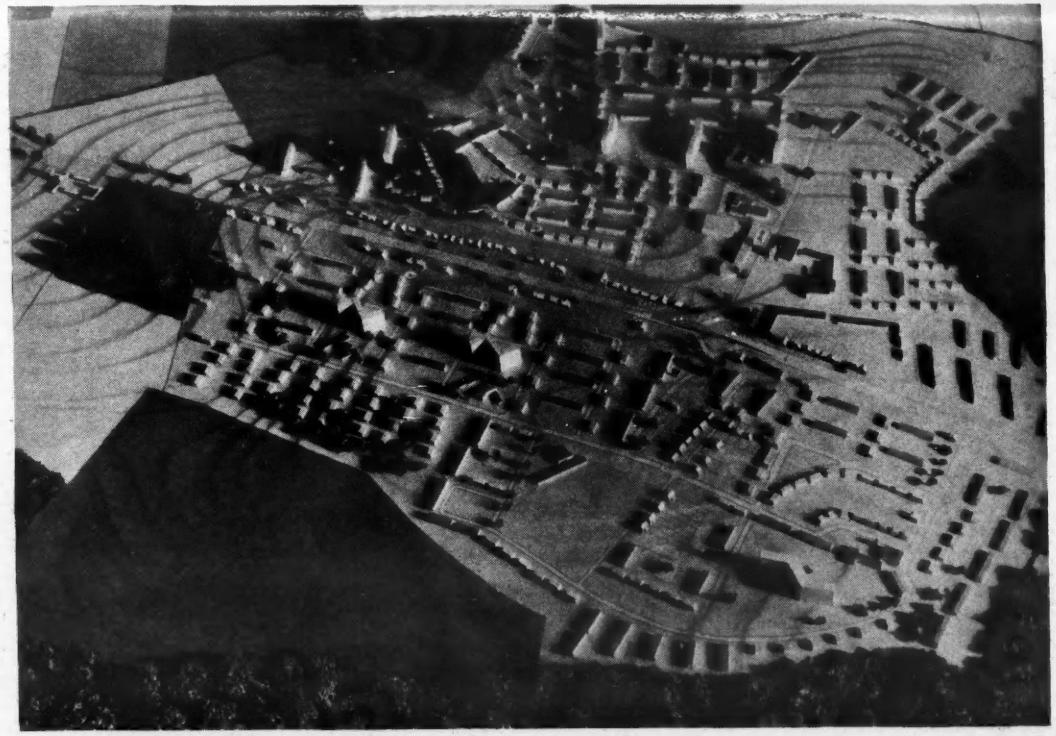
AMENITIES.—In addition to the farm strip, there are two or three wooded areas which are to be permanently maintained as public open spaces, and a considerable amount of private open space has been left interspersed with the housing development.

HEALTH CENTRE.—The health centre has been allotted a central site of five acres. The centre will be run on the lines of the Peckham Health Centre, as a club. It is to form a focal point of the social life of the whole community, and will cater for the leisure time of the complete family, being designed to allow both parents and children to pursue their recreation at the same place and at the same time. Facilities will be provided for an annual health overhaul for each family on the estate, for a restaurant, bar, dancing and dramatics. Indoor space for such games as billiards, table tennis, etc., will be arranged, and outdoors for football, cricket, tennis, etc. There will also be a covered-in swimming pool.

THE FARM.—To secure the health benefits of first-quality foods, the community is to have its own farm. The farm will be run on co-operative lines by the Society, and has been allotted an area of about 250 acres of the land now owned. This land is already being farmed by the Society and a herd of some 25 cows is being collected. Voluntary labour is playing a large part in the running of the farm.



Area plan showing (black) the new neighbourhood unit in relation to Coventry.



BRANDON WOOD COMMUNITY, COVENTRY. Model of proposed development, looking North.

HOUSING.—Owing to the large proportion of land relegated to farm use, added to the fact that the Society is anxious to provide as much private open space as possible, it is proposed that a fair proportion of the housing accommodation shall be provided in tall blocks of flats. In the first 200 dwellings there will be seven detached, 12 semi-detached four-bedroomed houses, 36 semi-detached three-bedroomed houses, 70 terrace houses and 68 flats, and, in addition, there will be 14 old people's bungalows. The house plans will be based on the latest Ministry of Health recommended type plans, and the flats will be nine-storey blocks. There will be a certain proportion of family flats, flats for young married couples without children, and also for single people.

A certain amount of difficulty has been encountered with the Town Planning Authorities on the nine-storey flat proposals, and an appeal to the Minister of Town and Country Planning has been made in this connection. Various type plans of the houses and of the flats are illustrated.

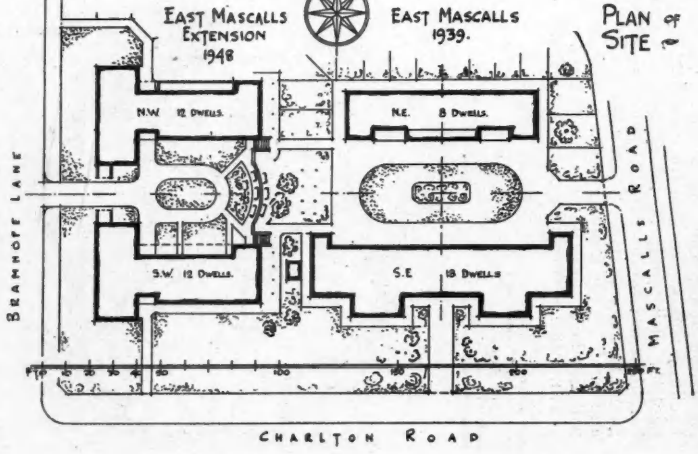
Mr. Fello Atkinson, A.R.I.B.A., collaborated with Arcon in the early days of the scheme with the layout on the north side of Brandon Wood-road. The models were made by Mr. P. R. Carstairs, A.R.I.B.A.

S.W. Block, facing Charlton-road. *Below*: The layout.

SMALL DWELLINGS FOR ELDERLY PERSONS, FOR GREENWICH M.B.C.

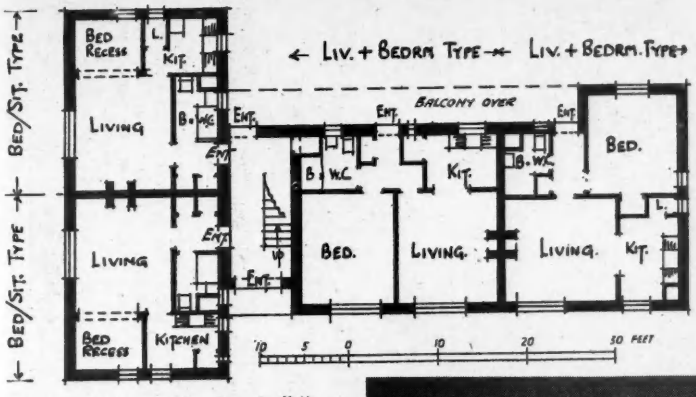
C. H. JENNINGS, M.ENG. (LIVERPOOL), M.INST.C.E., BOROUGH ENGINEER & SURVEYOR

C. W. CRASKE, M.M., A.R.I.B.A., CHIEF ARCHITECTURAL ASSISTANT



THE scheme illustrated by the accompanying plans and photographs comprises 50 small dwellings for elderly persons and others requiring a minimum of living accommodation. A beginning was made in 1939, with the erection of two blocks on the site of an old residence known as "East Mascalls," and these were fortunately completed before the outbreak of

Looking East from Bramhope-lane. *Below*: **Ground plan, S.W. Block.**



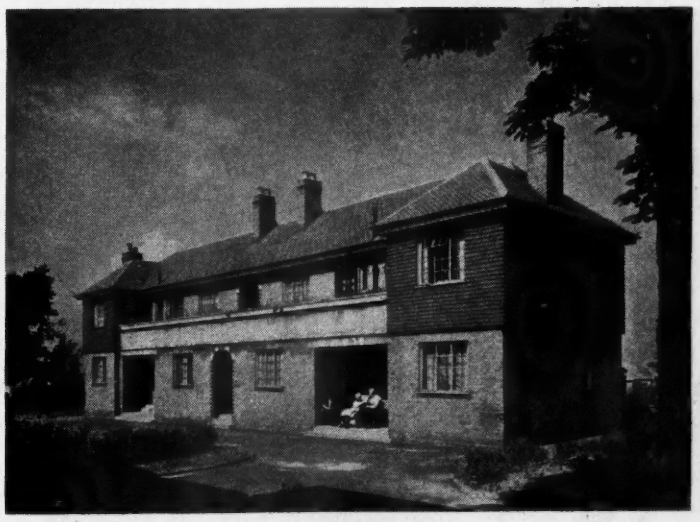
war put a stop to further building operations until some eight years later. A piece of land adjacent had by that time been acquired, and it was found possible to plan two additional blocks, which have recently been finished and occupied. The earlier scheme was carried out by direct labour; but for the recent addition of 24 dwellings the tender of Messrs. Cox Bros. (Contractors), Ltd., of Ilford, for £21,921, was accepted, and the work was put in hand in March, 1947.

PLANNING AND ACCOMMODATION: The opportunity was taken to introduce several improvements into the newer blocks, based on experience gained and profiting by the suggestions and criticisms offered by the original tenants. The new dwellings are larger in floor area, and each has a "Maxim" type bath in a bathroom, a feature much appreciated by elderly people. Hot water is provided by a "Charlton" type electrical storage heater. Each living-room has an open fireplace (Allied Ironfounders' A1 No. 2 Projector unit), and has the advantage of a southern or westerly aspect. Twelve flats have a separate bedroom, and twelve a bed-recess; each has a small kitchen, with larder and fuel store.

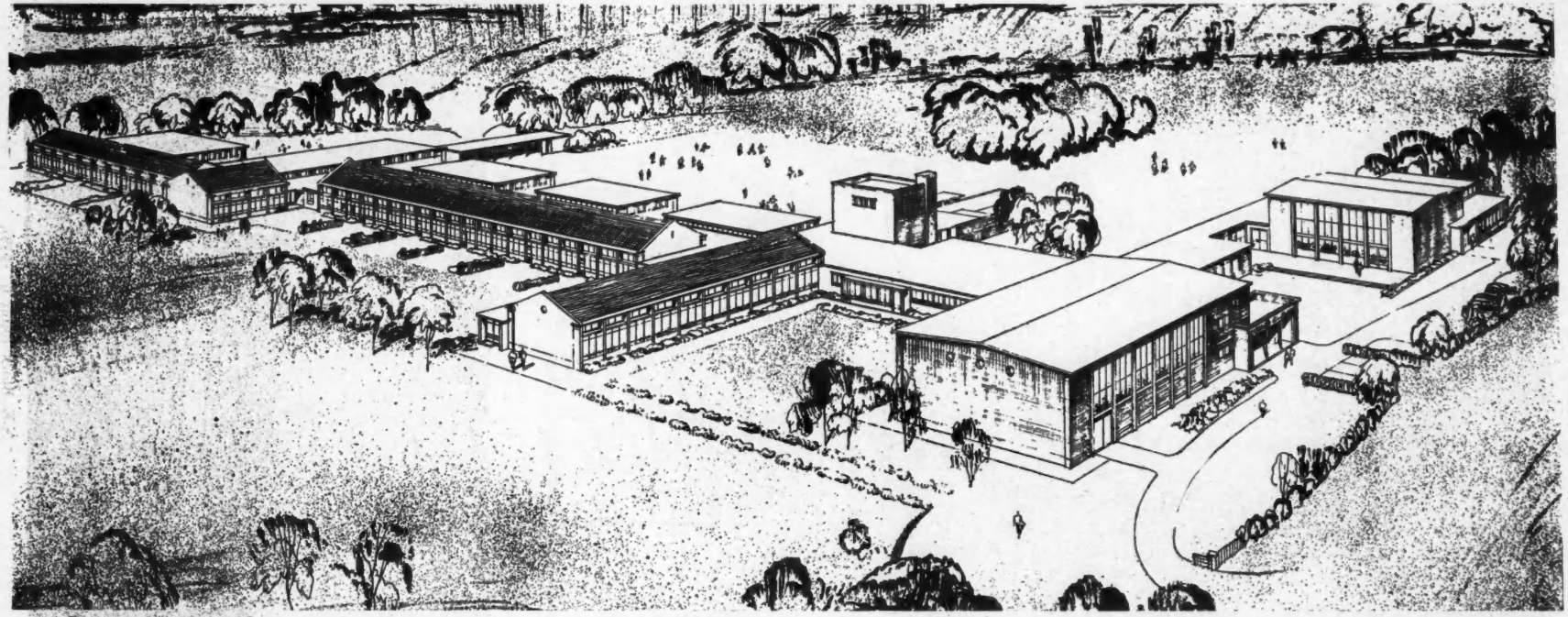
CONSTRUCTION: The blocks are brick-built and finished with Uxbridge buff facings, relieved by cast stone dressings. The roofs are covered with Marley interlocking tiles. Floors, balconies and roof slabs were carried out by Concrete, Ltd., and the plumbing was by Scull, Ltd. Floors are covered with wood blocks, and walls distempered in light and cheerful colours.

SITING: The new blocks are sited at a considerably lower level than the old, a difference which suggested the construction of a small terrace, with steps on either side providing free access to all parts of the site. Two rows of garden seats are provided on the terrace, which will enable the old people to enjoy together the garden amenities being provided. In addition, there is enough ground to allow each tenant to cultivate a small garden, and on the older part of the site this provision has been very popular. Clothes-posts and lines for outdoor drying are placed at the back of the terrace.

CONCLUSION: "East Mascalls" has had a somewhat stormy history, having suffered serious damage from bombing during the early years of the war. This damage has now been made good, and many of the original tenants are again in peaceful possession of their dwellings. Of several former members of the Borough Engineer's staff who took part in the design, mention should be made of Mr. (now the Rev.) G. W. Dolbey, A.R.I.B.A., from whose drawings the two recently completed blocks were mainly carried out.



N.E. Block (built in 1939).



PROPOSED PRIMARY SCHOOL AT LEAGRAVE, LUTON

HOWARD V. LOBB, F.R.I.B.A., ARCHITECT

THE Primary School at Leagrave, now being erected as part of the Luton Borough Council Education Committee's 1948 programme, is the first section of a project that includes also an Infants' and a Nursery School. The site slopes to the north-west from the old village of Leagrave, and rises again along its northern boundary to a new housing estate. A footpath crossing the site will be replaced by a road connecting the housing estate with the original village. The south-west corner of the site will be required for a proposed fast motor road. The larger of the two areas into which the site is divided by the footpath is suitable for the Junior School with its 4 acres of playing fields, as required by the 1945 Regulations, and the buildings have been sited towards the north of this area, (1) in order to avoid as far as possible the noise from the proposed motor road; (2) to adjoin the housing estate from which many of the children may be expected to come; and (3) to take advantage of the comparatively level ground at the bottom of the valley.

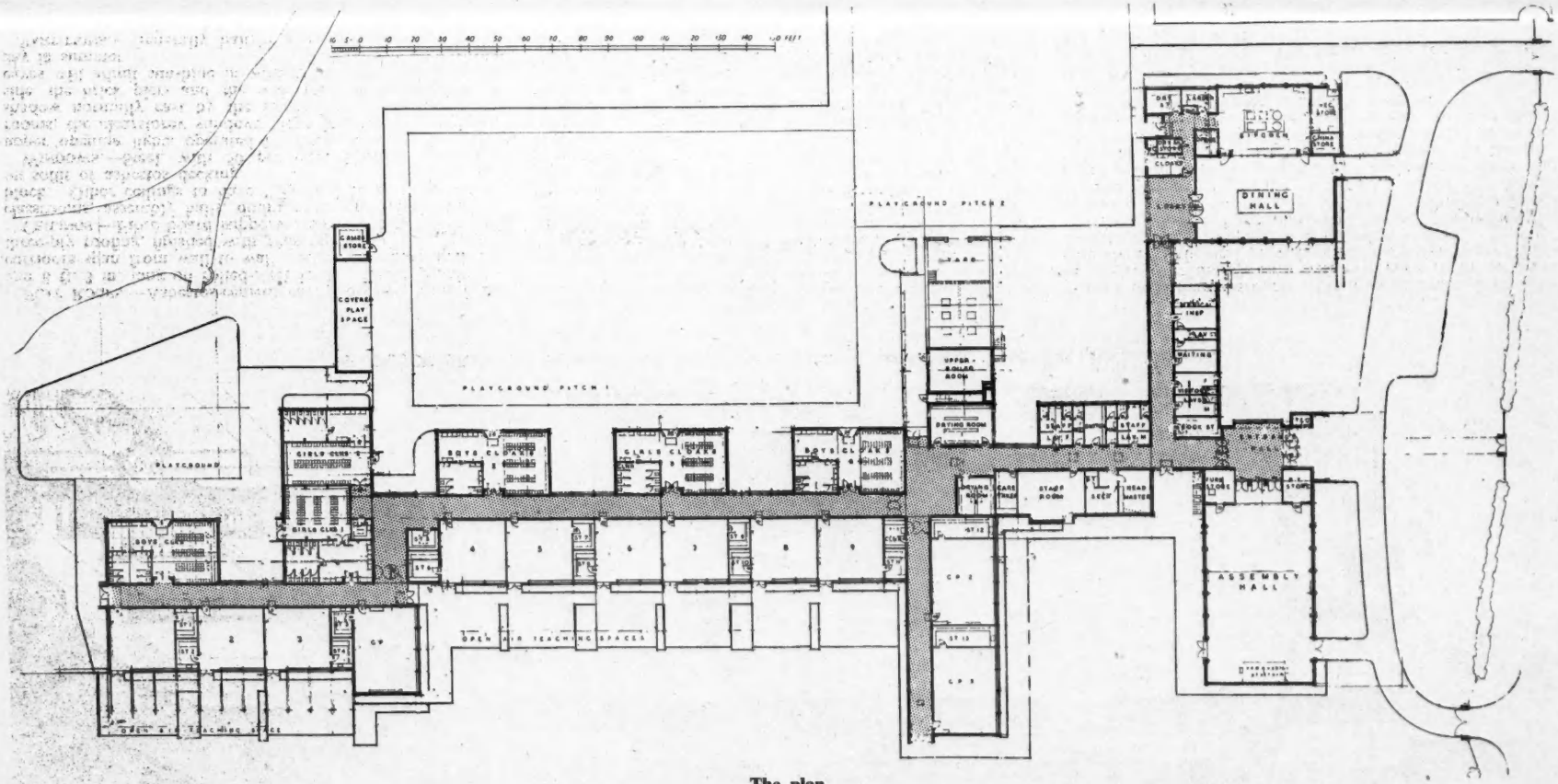
PLANNING.—The aspect of the classrooms is south-south-east. The general purpose rooms have been placed at right angles to the classrooms to avoid too rigid a uniformity and to permit a more compact general arrangement. Three classrooms and a general purpose room, with lavatories and cloaks, have been planned as a unit, which can form temporary accommodation for infants until the Infants' School is built; a small playing space of about half a court is planned adjoining this unit, in accordance with the Ministry of Education Memorandum on the Building Regulations.

The cloakroom blocks generally are interposed between the classrooms and playgrounds, where they form a sound barrier and are readily available both during classes and at breaks; the numerous entrances will permit very speedy and orderly access to the building and, in reverse, to the playgrounds.

Blocks requiring traffic access (boiler house and kitchen) are placed near the proposed road separating the two sites. The assembly hall is similarly placed, since it will form the only available community building for the new estate. For this reason also it is provided with projection room accommodation.

The administration unit is planned immediately adjoining the entrance hall, so that visitors wishing to see the headmaster need not penetrate into the school proper.

ARCHITECTURAL TREATMENT.—Instead of adhering to a straight line the buildings are sub-divided into units which are brought successively forward in conformity with the diagonal trend of the site. This arrangement breaks down the scale and eliminates the long façades and apparently endless corridors that are sometimes intimidating to the



The plan.

small child. The cloakrooms are also sub-divided into comparatively small blocks, between which light and air penetrate to the corridor windows.

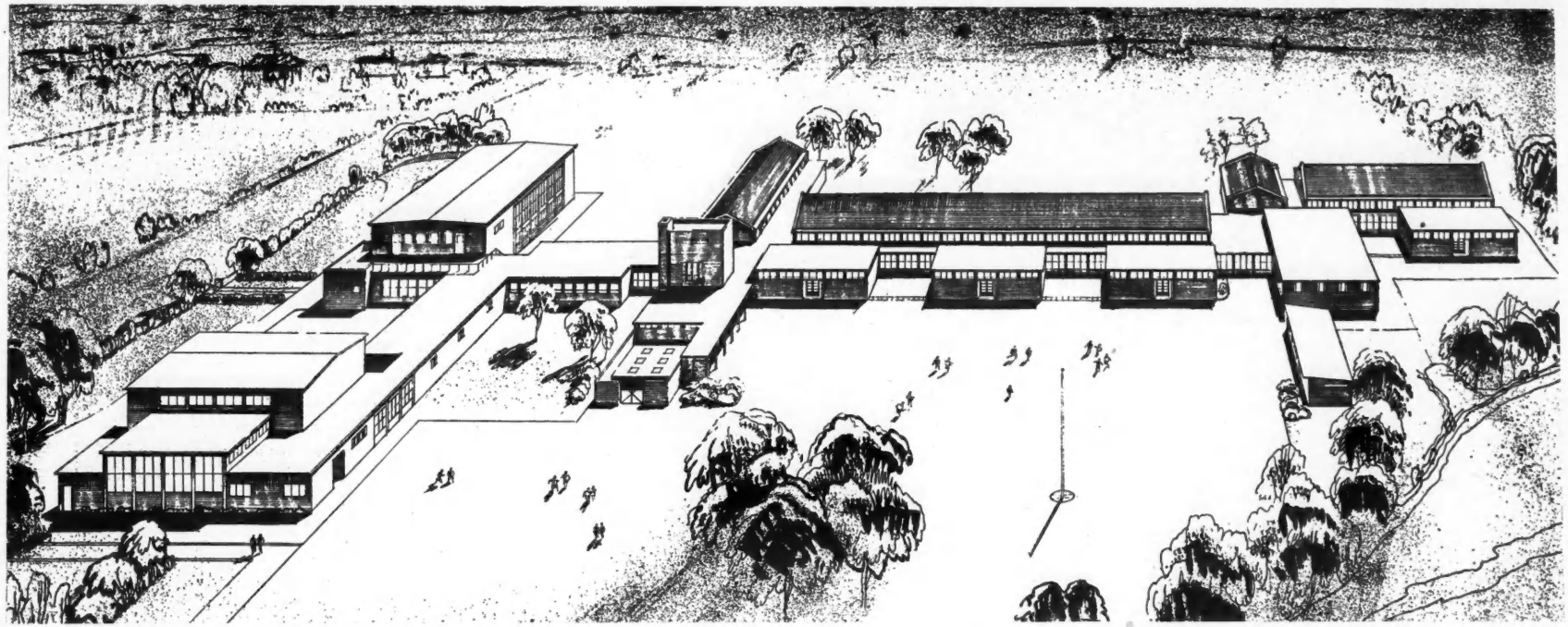
In many new schools the classrooms, though still the heart of the educational system, are rather insignificant in effect compared with the assembly hall group. To correct this tendency the classroom blocks are emphasised with pitched roofs: these roofs also make more obvious the division into sub-units, look less institutional, and are in harmony with the surroundings, particularly the new housing estate to the north with its low-pitched gable ends.

CONSTRUCTION GENERALLY.—The pitched roofs are covered with shingles, which are in good supply, afford first-class insulation, and permit the lightest possible structure. They require a certain amount of structural timber, but this has been kept to the minimum, and its expenditure is considered justifiable in view of the advantages mentioned. Elsewhere the roof system has been chosen for lightness and quick assembly and minimum demands for timber and steel. The walls and piers are designed to make the fullest use of the structural qualities of brick, which is also in good supply at present. All loads are taken on lateral walls or points of support, so that cross partitions can be removed if required during future alterations.

FOUNDATIONS.—Concrete beam foundations to walls, supported on concrete blocks at about 8-ft. centres.

EXTERNAL WALLS.—11-in. hollow walls in lime-cement mortar, faced externally with Ibstock wire-cut facing bricks flush jointed. Structural piers are similarly faced and pointed.

CLASSROOM ROOFS.—Cedar shingles nailed to 1½-in. by ½-in. battens on 3-in. by 2-in. rafters carried by very light welded steel trusses.



PROPOSED PRIMARY SCHOOL AT LEAGRAVE, LUTON. Howard V. Lobb, F.R.I.B.A., Architect.

FLAT ROOFS.—Asbestos-cement cavity decking units 8 ft. and 8 ft. 3 in. long on rolled-steel joists. Decking units to corridors span from wall to wall. Roof covering: built-up three-ply roofing, finished with white spar.

CEILINGS.—Fibre board supported on extruded sections to classrooms, assembly halls, dining-room and administration block. Other ceilings to have "Pyrok" spray finish direct on soffit of asbestos decking.

WINDOWS.—Steel, with 50 per cent. opening portions: upper opening lights operated by Arens gearing. In classrooms, the clearstorey windows slope inwards to avoid the shadow normally cast by the internal cill. On the south side, the brick piers and the wide transom and projecting eaves will admit sunshine in winter, but exclude it at midday in summer.

PARTITIONS.—Generally half-brick (except next corridors, which are to be 9 in. thick). Partitions are attached to piers with metal wall ties and not bonded in, so that alterations can be made with the minimum disturbance.

HEATING AND VENTILATION.—Accelerated low-pressure heating system with radiators generally and convectors in assembly hall, etc. Extract fans to assembly hall. Two classrooms to be fitted with dark blinds and extract fans for epidiascope display. The boiler-house to the Junior School is sufficiently large to provide for the Infants' and Nursery Schools.

ELECTRICAL INSTALLATIONS.—Tungsten lights in totally enclosed fittings generally, with fluorescent lighting over chalk boards. The broadcast reception and public address system serves loud-speakers in the assembly hall and every classroom. A microphone point will be provided in the assembly hall, enabling the school to be addressed either in the hall or in the classrooms. Gramophone records can also be played over the system. The projection room, etc., will embody all structural provisions for the exhibition of standard film, but no apparatus is included.

PLANTING.—The improvement of the site by planting is proposed. This includes the retention and tidying up of existing hedgerows and the planting of shelter belts to the north and west, partly as protection against cold winds and partly as acoustic screens between the school and the proposed motor road. Smaller trees are required for shade and amenity, and shrubs between the open-air teaching spaces for privacy and a degree of acoustic control.

The quantity surveyor is Mr. Oswald E. Parratt, F.R.I.C.S., and the general contractors are Messrs. T. and E. Neville, Ltd., of Luton. The tender price for the Primary School only is £105,856.

PLANNING THE HARTLEPOOLS

Policy of Industrial and Financial Stabilisation Urged

THE suggestion that the population of the Hartlepools be transferred to the new towns of Peterlee and Aycliffe was criticised by MR. MAX LOCK, A.R.I.B.A., A.M.T.P.I., planning consultant to the Hartlepools Corporation, when he spoke at the opening of the Hartlepools Planning Exhibition at the Town and Country Planning Association, London, on March 17. The exhibition, which showed the proposals for the Hartlepools of the planning group working under Mr. Lock, was opened by Dame Evelyn Sharp, Deputy Secretary, Ministry of Town and Country Planning.

At the opening of his address Mr. Lock described the main proposals for the replanning of the Hartlepools and mentioned industry, housing, neighbourhoods and the town centre, all of which were based upon the ascertained needs of the inhabitants.

He continued: It has been suggested that the Hartlepools population should undertake a mass migration to the New Towns of Peterlee and Aycliffe, and that the Hartlepools, a comparatively young town, should plan to contract. The thesis has been put forward that new towns can only be built and peopled by dismembering their established neighbours. It should be clearly understood that the function of the new towns is either to curtail the growth of the huge conurbations like London and Glasgow, or—as in the case of Peterlee or Glenrothes (Fifeshire)—to centralise scattered and socially-isolated mining villages.

The Hartlepools are not a large conurbation; their combined population of 86,000 comprises very few miners. The results of survey led us to propose that the population should be stabilised, allowing natural increase to be offset by migration. For medium-sized towns such as the Hartlepools, the reconstruction of their blighted centres and the economic extension of their outer neighbourhoods is by far the best way to economise national expenditure. Many existing social services can for the time being be stretched to serve new populations without incurring the expense of new buildings, and by careful planning of reasonably compact neighbourhoods much scattered sprawl can be knit together and land for food production conserved.

The capital assets of the Hartlepools are such that a policy of industrial and financial stabilisation is looked for in the Plan, avoiding on the one hand grandiose expansion, and on the other hand the wastefulness of disrupting and discarding the assets which exist. The future should hold for the Hartlepools:—(1) The continued development of the export of coal and import of timber, linking Hartlepools to the South Durham mining economy; (2) The industrial expansion of North Teeside and the ultimate construction of the suggested tunnel to South Tees, relating Hartlepools to Teeside economy; (3) The improvement of Seaton Carew as a holiday resort serving the region as a whole.

A Golf Match.

The R.I.B.A. Golfing Society played its first match of the season at the Ashridge Golf Club on March 30, when their opponents, the Building and Allied Trades' Golfing Society, won by 9 to 7.

CORRESPONDENCE

Architectural Assistants' Salary Scales.

TO THE EDITOR OF *The Builder*.

SIR,—Present difficulties in obtaining and keeping architectural assistants in face of the "high" wages offered by Government departments and local authorities, have been the subject of recent comment in *The Builder*.

Scrutiny of the "situations vacant" columns of the *Architects' Journal* and *The Builder* will, however, show that the average salary offered to-day is, prevailing living costs considered, scarcely higher than in pre-war days when architectural assistance was fairly plentiful, and grossly underpaid in consequence. To-day's salaries indicate clearly that the lesser proportion of members of the Royal Institute of British Architects, being either in private practice or holding public appointments, are employing the far greater proportion of their fellow members on terms well below those acceptable to qualified assistance in other professions; what doctor, for example, can obtain the services of an assistant at less than £850 per year?

It is surprising that the Royal Institute of British Architects has not seen fit to interest itself more in the financial status of the above mentioned greater proportion of its members—by, for example, drawing up minimum scales of pay for assistants in their various stages of qualification. Rather has it been left to a private firm, Sir John Burnet, Tait and Partners, to initiate a salary scale awarding reasonable pay to assistants—a scale which might well be taken by the Institute as a model in any move made in this matter.

Salary levels, if uncontrolled, may be adversely affected in years to come by the present policy of admitting to membership of the Institute such unlimited numbers as can get themselves through the qualifying examinations, completely ignoring the possibility of serious over-crowding of the profession in the future. Such over-crowding will always develop to the financial detriment of the assistant, and his or her exploitation will follow, as in the past. Only the Institute can prevent this by timely consideration and action.

The writer is of the firm opinion that any steps taken to deal effectively with these questions would be welcomed by the greater proportion of members of the Royal Institute of British Architects—the assistants—and would reduce, by rendering unnecessary, the present tendency of architectural staff to "pirate" from employer to employer for the sake of an extra pound or so per week.

ARCHITECTURAL ASSISTANT.

*** Our correspondent may not be aware that the R.I.B.A. in 1945 issued a salary scale for architectural assistants, based on pre-war scales with allowances. That scale is at present under revision.—ED.

DEVON AND CORNWALL ARCHITECTURAL SOCIETY

The 59th annual general meeting of the Society was held on March 26, at Exeter, when Mr. H. M. R. Drury, F.R.I.B.A., was elected president in succession to Mr. C. Lloyd Jones, L.R.I.B.A. The Senior Vice-president is to be Mr. H. J. Hammick, L.R.I.B.A., while the Junior Vice-president will be Mr. J. A. Powell, F.R.I.B.A. Mr. W. Martin Fleet was elected Secretary of the Society.

Mr. J. Bennett, F.R.I.B.A., was re-elected Honorary Treasurer and Mr. W. J. M. Thomasson, A.R.I.B.A., re-elected Honorary Auditor.

U.S.A. ARCHITECTS AND TAFT-HARTLEY LAW

Protection Sought for Professional Employees

MR. EDMUND R. PURVES, Executive Director of the American Institute of Architects, has filed a statement with the Senate Committee on Labour and Public Welfare, asking that the newly proposed National Labour Relations Act include provisions for protecting the collective bargaining rights of professional employees.

Mr. Purves recommended that sections of the existing labour management law (the Taft-Hartley law) with respect to professional employees be incorporated in Senate Bill 249. He stated no exception has been taken to these sections and that they have been successful in application. "The American Institute of Architects is a national professional organisation, comprising 88 chapters and seven State organisations in the United States and its possessions," he writes to the Senate committee, "and is the only organisation representing the profession of architecture. As the spokesman for its approximately 8,000 members, it is considered competent to express the opinion of the profession as a whole.

"The architects recognise the right of any group to form units for the purposes of collective bargaining," he said "but believe that as a supplement to this established right, membership in such unit should not be made a condition of employment.

"The architects believe that if a group of professional employees does organise for collective bargaining purposes, their actions should not be directed or governed by non-professional people.

"The matter of affiliation should be left entirely with the professional architects involved.

"The architects believe, further, that in the event of a collective bargaining unit being formed, it should have the sole right of designating its own representatives to take up matters with employers. This premise is based on the argument that persons outside of the architectural field are hardly qualified to act as representatives, since they would lack the knowledge and experience required intelligently to present the professional viewpoint in any collective bargaining case.

"We feel that because the practice of architecture is a career which requires a progressive and intellectual turn of mind, together with initiative, talent and a natural inclination, developed by intensive training, only those engaged in the pursuit of such a career should be vested with powers to determine policies affecting the welfare of the practitioners. It is inconceivable that anyone unfamiliar with the specialised training and experience necessary to the profession could satisfactorily represent any such group."

Valuation Procedure: Appointed Day.

The Minister of Health has made an Order* fixing February 1, 1950, as the appointed day for bringing into operation the new machinery for the preparation and alteration of valuation lists for rating purposes which is contained in Part III of the Local Government Act, 1948.

* Statutory Instrument No. 434 of 1949. The Local Government Act, 1948 (Appointed Days) Order, 1949. Published by H.M. Stationery Office, price 1d. net, post free 2d.

REVERBERATION: Some Historical Notes

SOUND ABSORBENTS IN CONCERT HALLS

THE start shortly to be made on the construction of the new concert hall on the South Bank of the Thames has awakened considerable interest in the acoustic problems which the design of such buildings presents. For this reason we publish below some historical notes on Reverberation prepared by Mr. Hope Bagenal, F.R.I.B.A., who has been appointed Acoustics Consultant for the South Bank Concert Hall. The notes formed the basis of a paper read by Mr. Bagenal before the first Summer Symposium of the Acoustics Group of the Physical Society.

TO-DAY designers of room acoustics are preoccupied with background tone and with good definition. The broadcasting of music often brings us experience of old and new halls, standards of tone have become more critical, and it is often found that some old building has excellent acoustic properties. It is therefore worth while looking at the conditions under which traditional standards of musical performance have actually arisen.

In the matter of tone one can begin with the reverberation chamber conditions of the large vaulted Gothic church. Reverberation at middle pitch measured by ear can be anything from five seconds (Salisbury Cathedral) to ten seconds (York Minster). These conditions produced beautiful choral music in which separate melodies for four parts, written under laws of counterpoint overlap, give a certain kind of harmony very different from the later kinds. There are no beats, tone is built up slowly by noticeable crescendos, and there are corresponding diminuendos or gradual withdrawals of sound energy. The music is unaccompanied; it often relies on the tonality of the church, sometimes called the "sympathetic note," for the sustaining of pitch, and singers of plain-chant and polyphonic music often find it very difficult to keep in tune when singing in a concert hall. The sympathetic note varies between G and A sharp, and is most frequently the tenor A—frequency 440 c/s. on the piano. This A appears as the reciting note of the precentor, and is the keynote in ecclesiastical music of all kinds. In some churches the tonality of the sympathetic note is so strong that services must be transposed to it, or well away from it, if singers are to keep in tune. In some cases there are two sympathetic notes, one in nave and one in choir. Wells and Ripon have A flat in choir and A in the nave. Oxford Cathedral nave can use both A and C sharp, the major third.

Standards of Tone.

The artistic, and the acoustic, character of plain-chant and polyphony is the clear slow weaving of sustained parts having full and simple pitch character. There are no tempo effects, nothing is dramatic, all is contemplative. A small highly trained choir can produce—by using the church as an instrument—the most satisfying results. Clearly in plain-chant we have our first standard of tone. I define it myself as, for a choir *fullness*, for a solo voice *roundness*.

It applies specially to sustained tone with a slow build-up, that is, to voice and organ. It is the choral experience at its most characteristic, and its true home is the church.

But its slowness must be recognised. The mechanism of the music is the slow sequence of direct plus reverberant notes, but often the treble part will clearly register a phrase by the direct sound which for a short time makes a superimposed pattern, presently merged again. It seems to me that the ability of the treble part to *register* probably came to be recognised. But the problem was *definition*. Definition was always liable to be swamped by background. Clearly if the speed—if the dramatic element—was to be increased, *definition* must be improved.

It was improved by two things. The Reformation in Germany introduced large galleries into the churches which increased the audience factor and reduced reverberation. And it was found that stringed instruments, especially violins, treble viols and the violina piccola, could register in a church and drown out reverberation by the direct sound. Hence the acoustic character of Bach's music, in which background reverberation and choral tone still persisted, although reduced, and at the same time string parts were added to choral parts. This is important: the instruments are not mere accompaniments —they are true parts, and must be heard as such: the music moves faster—Bach conducted briskly—and tempo effects, such as the shout of "Barabbas" in the Passion music, are clearly introduced.

A Practical Lesson.

In fact, the Passion music has moved into the region of musical drama at its most effective, and this drama is heightened by the return in the chorales at due intervals to the older contemplative and medieval character. Now the practical lesson of this is that modified church conditions are needed for Bach's choral works, and not concert hall or opera house; in other words, the useful compromise of background and definition given by the Thomas-kirche at Leipzig, where the reverberation as calculated at middle pitch and *with a full congregation* is very roughly between two and a half and three seconds.

Here again is another standard set—that of enough background to give good choral tone, and enough definition to hear fairly rapid instrumental parts. In most modern auditoria you get the one or the other, but not both. In the Lutheran church, *definition* is greatly helped by lifting the sound source up on the west gallery, so that the vault acts as a useful reflector. Considering that to-day the Passion music is both the greatest and the most popular of musical works—how well worth while it would be to have in London a choral auditorium in which it could be properly heard.

When we turn from the Matthew Passion to the Messiah we are acoustically in a different world. The Messiah was written by Handel for the old Royal Theatre, Covent Garden, where oratorios during Lent replaced opera and pantomime. When used as a concert hall the small orchestra pit was not used—the orchestra and Handel's organ were on the stage, and the choir and soloists were in front on the very useful apron-stage, characteristic of the 18th-century theatre. Reverberation was short—theatre conditions prevailed—the reverberation was probably shorter than that of Covent Garden to-day, that is, less than one and a half seconds at middle pitch. We know that when Handel was once told that his audience on a particular night was small—he replied, "My music will sound the better." He would clearly have preferred a fuller choral tone, but had generally to do without it, and, in fact, we can connect with this the broad loud technique of his music—the Handelian shout. It is acoustically foolproof, can be performed anywhere, is both popular and first-rate, and has been done under every conceivable set of acoustic conditions, with every variety of musical resource.

The 18th-Century Theatre.

Now the 18th-century theatre was very large, seating often 2,000. But a large range of absorbents—boxes, thick curtains, a large audience factor, carpets, wood structure, upholstery—effectively reduced reverberation, probably over a large part of the musical scale. At the same time, baroque ornament—cartouches, columns, nymphs bound by garlands, amorini holding cornucopias, and the like —acted as a perfect diffusing treatment, and prevented serious echoes. Ceilings were flat, though domes were sometimes painted on them. In this auditorium the orchestra pit held some 20 to 30 players, whose job was not primarily to play separate parts, but to accompany and adorn the singers with suitable harmonies. The centre figures were the singers, and it was a soloist's art. In those days there were no footlights. Under the loops of wax lights, in attitudes wholly conventionalised, they stood—those famous *castrati*, and would run up and down the musical scale with incredible agility and performed feats of bel canto never heard before or since. It is this virtuosity that makes the performance of the earlier operas so difficult. Here, in this remarkable auditorium, the Italian aria with introduction, and accompaniment on strings, carried music forward from the church cantata to the operas of Mozart.

And here we get *definition*. The extreme rapidity of the vocal ensembles in Mozart and Rossini opera assumes both the tripping Italian tongue and the very short reverberation of the theatre. Note therefore their use for general repertory purposes.

The reverberation-frequency curve for the old Scala at Milan was published in 1935 by Meyer and Jordan (*Elekt. Nachr.-Techn.*, 1935, p. 213), and slopes down from about 1.8 seconds at 125 c/s. to 1.4 at middle (500 c/s.) pitch with a very gradual fall to 1 sec. at 3,000 c/s. The same authorities show the same character of curve—a gradual slope—for the opera house at Budapest and for the State Opera at Berlin (presumably the old Unter den Linden theatre). The B.B.C. figures for Glyndebourne show a curve almost flat.

In these old buildings I would point to the considerable *bass* absorption by wood linings and framing and by lime stucco on wood lath, and *middle* absorption by upholstery and curtains in thick folds. Another point is this—sufficient loudness. As early as Pepys' time people complained if they could not hear well at the theatre. Now *strength of tone*—a properly balanced loudness at treble, middle and bass—seems to me to be something quite different from what I have defined as *fullness* but it is very important.

On strength of tone depends that very essential communicating of acoustic excitement which makes for the success of

an auditorium. Part of the success of Glyndebourne is due to an experience of strength of tone almost equivalent to sitting in the orchestra pit. There is nothing so disappointing as hearing the sound source as though it were too far away in the open air. There is nothing more exciting than the illusion of reserve power in the prolonged *crescendo*.

Two Acoustic Schools of Music.

One might say that to-day there are two acoustic schools of music—the loud school exemplified by modern composers such as Martinu, Bliss, Bartok and others who, with a large orchestra well supplied with brass, deliberately design in vibratory experience—and very exciting it is. For them I suggest that the large modern 3,000-seat fan-shaped hall is suitable. I do not believe that background really counts for such music. Strength of tone and clear definition in staccato passages —which means wiping out every trace of "clap-back"—are all that is required.

But there is also a real demand for sheer beauty of tone: this is connected with the classical composers with moderate orchestra and with an adaptation of sound source to volume: it is seen in the appreciation of what is called "singing tone" in strings and also in the demand for gramophone records conveying background tone. But here definition is equally important: the test is the beautiful rapid string phrase clearly impressed as a pattern but enhanced in the magical way that a good concert hall is able to effect. That is far the most interesting and admirable objective of our modern studies.

It involves, of course, an equal attention on the one hand to definition and to transients, and on the other to vowels and sustained tones. You will perhaps call to mind that the American physicists Maxfield and Albersheim have recently attempted to define the "liveness" of a concert hall and to analyse it. They believe that an acoustic constant can be found which would represent the "liveness" as perceived in any listening position in a hall and that such a constant should be a function of variables such as the acoustic properties of the enclosure, the distance from the sound source (meaning the loudness of the direct sound) and the directivity of the sound source.

This relating of the direct sound to the background and the integrating of the two by the human ear is a valuable approach. All recent observation shows that reverberation can be drowned out by direct, or by direct-plus-first-reflection sound, and that definition can in fact be secured on a record with very much more background than was thought possible in early days. The lesson of church music is that high-pitched tone can always be used to give definition against very long reverberation. But it raises the important practical question as to the relatively much greater absorption of high pitch components by all surfaces and therefore the effectiveness of glossy surfaces near the source. For this reason much more work on absorption at high frequencies is desirable. We are badly in need of more data.

It is possible to calculate a reverberation figure at middle pitch sufficiently accurately for speech requirements of a rough and ready kind—such for instance, as for council chamber, law courts, board room—either for remedial measures or for a new building. But when we come to music requirements, and want a picture, however rough, of the reverberation at bass, middle and treble—in other words, the reverberation-frequency curve, the existing absorption data are inadequate. Many coefficients have not been taken higher than 2,000 c/s. Building elements such as normal hard-wood panelling, oak roofing timbers, plasterboards, many types of flooring, ordinary match-boarding on rails (as distinct from panels on framing) and wall surfaces finished with a high gloss, have either no figures at all, or only a middle pitch figure, or are clearly unreliable at bass and treble. Again there are no figures for glass applicable to church windows, and no figures for Portland or Bath stone with and without dust layers to show what such areas are doing to upper frequency components.

Useful Comparisons.

I had last year a particularly difficult case in which I could only guess the absorption of most of the surfaces, and asked the Building Research Station if they would spare time to analyse it and give me an idea of the frequency curve as recorded, in order that I might compare it with my calculated figures at three frequencies. This they did. The results showed how far out one can be in the treble and bass, and to a less degree in the middle range. This has led to further work on halls and churches with further comparisons of calculated figures and instrument readings. These comparisons are of course of great use to me from a practical point of view: they help me to see what the major absorbent factor is probably doing at a particular region of pitch; they help me to form a judgment about high-frequency air absorption; and they give me an idea of absorption by the kind of inter-reflection we obtain between rows of desks or pews, in recessed galleries and between the lateral walls of aisle chapels or other baffle features.

From a scientific point of view they show at once by comparing measured curves with the calculated figures, at what regions of pitch absorption values chiefly and obviously need to be corrected, as, for instance, where resonance absorption of a preponderant diaphragm surface has clearly not been sufficiently allowed for.

I am convinced that a programme of field work of this kind would be useful. At the moment attempts are being made to select halls and churches on some basis of comparison, and such that each has a clearly preponderant surface factor. It becomes evident that in lofty churches wall area is preponderant; in normal municipal halls, ceiling area. Floors, in some categories, are responsible for most of the absorption, in others are negligible. When a large number of cases have been analysed then some useful *sequences* of comparison could be selected, and perhaps a number of equations found for a number of unknown quantities. It is interesting to recall that W. C. Sabine—some 40 years ago—arrived at some approximate figures for bricks in cement, for pine sheathing, and for glass, by comparing the office, the greenhouse, and the laboratory of the Botany Department at Harvard, each of which had varying amounts of the same three surface materials. One might note in passing that one has often to fall back on the figures of the early Sabine period for lack of anything better.

The Building Research Station used an impulsive sound source, usually a pistol shot, and recorded the decay times in octave bands covering the range 60 c/s. to 9,000 c/s. Each measurement was repeated at least twice. The accuracy was estimated to be within plus or minus 0.5 per cent.

OBITUARY

F. A. Roberts, F.R.I.B.A.

We regret to record the death at the age of 64 of Mr. Frederick Andrew Roberts, F.R.I.B.A., of Mold, Cheshire, one of the best-known architects in North Wales.

He was educated at Mold County School, where he became art master, and later was articled to a firm of architects in Liverpool. He subsequently returned to Mold, where he practised for many years. Mr. Roberts, who was elected a Fellow of the Royal Institute in 1930, was a former president of the North Wales Architectural Society.

Edward Carter, F.R.I.B.A.

With regret we record the death of Mr. Edward Carter, F.R.I.B.A., of the Chestnuts, Catherine-road, Surbiton. Mr. Carter was formerly senior partner in the firm of Carter and Young, architects, of Kingston, but retired from active participation in the firm's affairs some years ago.

He was responsible for the design of many buildings in the Kingston area, including one of the major extensions for Messrs. Bentalls. As a young man Mr. Carter was a keen athlete and played for Surbiton Hill F.C. and for his county.

CODE OF PRACTICE

Tile and Slab Flooring

THE Codes of Practice Committee has now issued, as a draft for comment, the undermentioned Code and related Sub-codes as one document entitled "Code 202, Tile and Slab Flooring": Code 202, Tile and Slab Flooring; 202.101, Clay and Concrete Tile and Brick Flooring; and 202.102, Natural and Cast Stone Flooring.

The remaining Sub-code under this heading, 202.103, "Composition Block Flooring," has already been issued for comment separately, bearing the code number 2.134 under the earlier numbering scheme.

The Code and its Sub-codes have been drafted by a committee convened by the R.I.B.A. on behalf of the Codes of Practice Committee.

The main Code, 202, deals generally with the properties and characteristics of tiles, bricks and natural or cast stone as flooring materials, and with the essential factors to be considered in choosing a material suitable for the conditions of use. It makes recommendations regarding materials to be used, design and workmanship as it affects the laying of floors, e.g., the preparation of sub-floors, the laying of screeds and the protection of newly laid floors during subsequent building operations.

The Code, which is in draft form, is subject, before publication in final form, to amendment in the light of comment received. Comments, which are invited, should be submitted by April 30. Copies may be obtained from the B.S.I., 24-28, Victoria-street, S.W.1, price 4s. post free, proof reference CP(B)827.

A Planning School.

The Herts, Suffolk and Cambridge Branch of the Faculty of Surveyors is holding a one-day school in connection with the Town and Country Planning Act at the Watford Town Hall, on May 7. Applications for tickets should be made to Mr. H. Holmes, 47, Market-street, Watford. The cost is 5s. 6d.

PRACTICE NOTES ON DEVELOPMENT CHARGES, TOWN AND COUNTRY PLANNING ACT, 1947.—5

By Norman P. Greig, B.A., Barrister-at-Law, F.R.San.I., F.I.Arb., etc.

PROCEDURE FOR APPLICATIONS TO DETERMINE AND VARY DEVELOPMENT CHARGE.—(Cont.)

CLAUSE 114. If the District Valuer is prepared to recommend a figure for the development charge, he will issue *direct to the applicant* that figure within a month from receipt of a proper application, unless the District Valuer has informed the applicant that the case is too complicated for normal procedure, or the applicant has informed the D.V. (in both cases in writing) that the case is not urgent, and that he is willing for the month to be extended in order to negotiate on the amount.

CERTIFICATE OF SATISFACTION.—This will be issued without any special request, when the charge has been paid or satisfactory security has been given (Clause 115).

URGENT DEVELOPMENT.—In this case, the amount recommended by the District Valuer can be sent at once to the Board's office if the applicant states in writing that he agrees with the amount. The Board's receipt is regarded as a "consent to proceed"; but, as the ultimate responsibility for the charge is with the Board, they must reserve the right to increase (in exceptional cases) the amount actually paid—but the development can go on in the meantime (Clause 116).

INFORMAL ADVICE FROM DISTRICT VALUER.—The Board say they realise that sometimes, even before the land in question is bought or sold, and in order to prevent unnecessary preparation of plans and drawings, informal discussion with the Valuations Office might be proper and useful even before the D.1 Form is sent in. With this purpose in view, the Chief Valuer has authorised District Valuers (a practice in which the Board concur) to discuss with owners intending to operate Method B of "House 1" (printed in Appendix B to these Practice Notes), *bona fide* developers or their professional advisers questions in regard to the land in which they are interested either as developers or which they wish to dispose of for early development. But in these cases the above persons must submit sufficient details of the intended development so that an approximate assessment of the possible charge can be made: they further point out that these *informal* discussions are never to involve *formal* valuations (Clause 117).

SAFEGUARDS FOR PURCHASERS.—This clause warns future purchasers of land of the necessity for satisfying themselves as to any existing liability for a development charge in regard to a development carried out since the "appointed day." If the vendor has had any correspondence in regard to a development, he should produce this; otherwise, unless the development was exempt from charge, it is up to the purchaser to ask for either the "Certificate of Satisfaction" (Clause 115) or the Board's "Consent to Proceed" (Clause 116).

EFFECT OF DETERMINATION OF A DEVELOPMENT CHARGE.—In general, the charge is assessed for a particular development, is in perpetuity, and payment of the charge frees the owner of any subsequent interest in the land from liability. But the Board point out that they can, if they think fit, direct that a determination relates only to the holder of an interest in the land at the time, and then, if the land is sold or there is some new interest in it created, a fresh application must be made. This power, however, cannot be exercised once the development has been carried out; it furthermore will not be exercised when land changes hands by operation of law (say, death). The Board's direction will never be issued in a separate document: if not contained in a "Certificate of Satisfaction" or a "Consent to Proceed," it may be assumed that none has been or will be given (Clause 119).

In Clause 120, the Board point out that the amount of the charge has to be based on values current at the time it is determined, and, furthermore, that before they can determine a charge in a particular case, they must be satisfied not merely that the applicant (or his agent) can carry out the development, but also that it will in fact be carried out (see S.70 (1) (b) of the Act).

In general, the Board, in determining a development charge, make three conditions:—

(a) The applicant must be able to show that the development will take place within a reasonable time (and suggest "reasonable" might usually mean "within one year," unless the project is a considerable one);

(b) They must be satisfied that any statutory or other consents (a building licence included) are likely to be granted within a "reasonable" time, and

(c) They must be satisfied that the applicant has, or can obtain, a sufficient interest in the land to enable him to carry out the development (Clause 121).

DEVELOPMENT FOR PERIOD ONLY.—In the case of a planning permission involving a change of use only, for a limited time, the determination of the charge must be related to that period as a maximum. Also, if an applicant requests the Board to fix a charge for a change of use covering a limited period, the Board must comply. If it is intended to continue the use at the end of such period, then a new D.1 must be submitted, and, of course, a fresh charge paid (see S.72 (2) of the Act) (Clause 122).

By Clause 123, in regard to *change of use* by lessees, the Board point out that it might be imprudent to apply for determination of charge for a longer period than the actual length of the lease, unless the lessees are either sure that a renewal would be forthcoming, or a contribution from the freeholder will be obtainable. The Board suggest that if the change of use is for a "risky venture," developers can ask for the charge to be assessed for, say, two or three years, in case the developer wishes to abandon the venture.

By Clause 124, in the case of building or other operations, the Board say they must normally assess the development charge on a perpetuity basis; hence it might be imprudent for a lessee to assume liability for the whole of the charge unless his interest was long enough to enable him to reap the full benefit, or to cover the effective life of the building.

Clause 125 contains an example of the Board's procedure where planning permission is given after July 1, 1948, for erection of a building to be used for a named period only (say a garage for seven years only). The charge will be limited to the value for that period. At the end of the period a further D.1 must be sent in unless the building is removed and the use reverts to the original existing use.

VARIATION OF DEVELOPMENT CHARGE

Note XXXIV (Clause 127). Reiterating their power to vary, on application made to them, because of change of circumstances since the determination was made (for example, where land has been affected by development of existing land in a manner inconsistent with the development plan), the Board say they do not propose to use this power merely because the developer has made an unwise bargain. They say the example given in Section 73 (1) of the Act typifies "the change of circumstances" which might influence them.

By Clause 128 where a charge has not been fully paid, the amount outstanding is automatically cancelled if (a) the planning permission is revoked by an Order under Section 21, or (b) an Order under Section 20 requires the removal of the building or discontinuance of the use, or (c) the land is compulsorily acquired.

PART V.—PAYMENT OF DEVELOPMENT CHARGE

TIME AND METHOD OF PAYMENT.—In the main, there is little in this Part of the Notes shedding new light on procedure; but the Board say:—

(a) They consider that in the great majority of cases the development charge will be paid in a single capital payment before the development commences; such a payment may avoid an encumbrance on the interest in the land;

(b) Where a single capital sum is not paid they would prefer a series of two or more instalments to any other method (see Section 71 (1) of the Act).

POSTPONEMENT OF PAYMENT.—The Board say that where a claim has been lodged on Form S.1 before June 30, 1949, in the case of certain special forms of development, promises have been made that payment of the charge can be postponed till 1953 (when the claims on the £300 m. Fund are to be paid). Such cases are (a) concessions given to owners of "single plots" (set out in the Board's pamphlet, House 2), and (b) those given to builders' land (set out in pamphlet S.1.A. (N.R.)).

Finally, the Board say they will be prepared to postpone (but not longer than July 1, 1953) payment of development charge where a considerable amount of money in relation to the pre-Act value of the land had been spent before July 1, 1948, on roads, services or like improvements (including road charges). In regard to this matter (under the circumstances detailed in Clause 139), developers are invited to discuss the matter with the District Valuer when negotiating the amount of the development charge.

APPENDIX A contains the Code for Cubing Buildings which has been jointly prepared by the Royal Institute of British Architects and the Royal Institution of Chartered Surveyors. It is suggested that, though not a legal instrument, it should not be departed from except in unusual circumstances.

(Concluded.)

Pattern Staining in Buildings.

The Building Research Station, D.S.I.R., has recently published Digest No. 4, "Pattern Staining in Buildings," which sets out the principal causes of this kind of trouble and suggests possible methods of prevention.

IN PARLIAMENT

National Parks Bill

THE House of Commons has given an unopposed second reading to the National Parks and Access to the Countryside Bill, but it is obvious from some of the detailed criticisms that were made during the debate that the Bill will be amended in Committee.

MR. SILKIN, in moving the second reading, said that the largest of the new national parks would be over 800 square miles. We could not afford, as in the U.S.A., to set aside large areas solely for recreation or indeed for the purpose of establishing a museum. National park areas such as were proposed in the Hobhouse Report represented no less than ten per cent. of the whole area of England and Wales, and the conservation areas—there were 52 mentioned in the report—would account for another 15 per cent. They had to be extremely careful how they sterilised 25 per cent. of the country.

He emphasised that the members of the National Parks Commission would be persons with a love of the countryside and a knowledge and understanding of open-air life and the needs of recreation. The Commission's first task would be to select the areas for designation as national parks. Detailed administration would be carried out by special parks committees. Most of the national parks would be within the area of a number of authorities, and where there was more than one committee a joint board could be set up. Normally it was his intention to set up a joint board to secure uniformity of administration, but in a case like that of the South Downs, where out of 176,000 acres, 800 were in the county borough of Brighton and 4,000 in Eastbourne, it was a matter for consideration whether an advisory committee would not be preferable to a joint board. On the assumption that the Bill became law before the summer recess, it was conceivable that by the summer a number of national park areas would be actually designated and awaiting approval by the Minister. He could give no guarantee that it might not be essential to permit a certain amount of undesirable development in the national park areas. It might be necessary to permit some part of the areas to be used for the purposes of national defence; it might even be necessary to utilise the mineral wealth which lay in those areas to ensure the economic life of the people, subject to a number of considerations, one of which would be that restoration should take place at the earliest opportunity.

The Bill had immense possibilities, but its success must depend on the courageous determination and imaginative spirit of all concerned. It was a people's charter for the open-air. At last we should be able to say that the mountains of Snowdonia, the lakes and waters of the Broads, the moors and dales of the Peak and South Downs, and the tors of the West Country belonged to the people as a right and not as a concession.

MR. W. S. MORRISON, welcoming the Bill on behalf of the Opposition, expressed the view that the chief potential danger to these open spaces did not arise from the private developer, though he might by an unsightly building ruin a fair prospect, but from Government departments and statutory undertakings. The feature of the Bill which raised the largest question of principle, and which had incurred for the Minister the express displeasure of some of the voluntary societies, was the position to which the National Parks Commision had been relegated. Its functions were largely advisory. That was a very different conception of the functions and status of the Commission from that recommended in the Dower and Hobhouse reports.

Development Value.

MR. GLENVIL HALL, replying to Mr. Assheton, said that claims under Part VI of the Town and Country Planning Act, 1947, for loss of development value, whether in relation to building value or minerals, were regarded as property of which the amount or value was not known at the date of death. Under Section 6 (3) of the Finance Act, 1894, satisfaction of the duty was deferred until their amount was known. Legacy Duty and Succession Duty were dealt with similarly.

North-East Region Housing.

MR. WILKES asked the Minister of Health to what extent it had been his policy to grant an additional housing allocation to local authorities in areas where the local building industry had succeeded in completing the original allocation within the period; whether any town in the north-east region had, on completion of its original allocation within the period, had its request for an additional allocation refused; and which local authorities in north-east England had applied and received an additional allocation on completion of the original target.

MR. BEVAN said that additional allocations were made to local authorities as soon as satisfactory progress had been made with the initial allocation for any period, so as to maintain a continued house building programme. The second and thirds parts of the question did not, therefore, arise.

Economic Survey, 1949.

MR. EDWARD DAVIES asked the Minister of Health why, in view of the acute shortage of housing accommodation, less money was earmarked in the Economic Survey for 1949 for new construction and maintenance of permanent houses in England and Wales than in 1948.

MR. BRAMALL asked the Minister of Health how many permanent houses it was planned to complete in the year 1949 within the gross investment figure of £420 million prescribed by the Economic Survey for 1949.

MR. BEVAN said that the figures in the Survey were broad indications of the estimated amount of expenditure on housing work during the year. He preferred not to make an estimate of the number of new houses which would be completed during the year, the course of the housing programmes being already fully indicated by the facts and figures in the published housing returns.

Steel Subsidy.

MR. G. STRAUSS, the Minister of Supply, said that the Government had been considering the subsidies at present being paid on iron and steel. They had come to the conclusion that the subsidies to meet the excess cost of imported finished steel and the import duties on pig iron and steel should be continued. But as from April 1 the remaining subsidies would cease with an estimated saving to the Exchequer for the year 1949/50 of about £25m. The corresponding increase in cost to the industry would necessarily be reflected in higher prices for its products. The Iron and Steel Board had for some time been making a detailed review of the price structure of the industry and recommended that certain other price adjustments should be effected at the same time. The new maximum prices resulting from this review and the withdrawal of the subsidies were embodied in the Iron and Steel, and Bolt and Nut Control Orders. They were designed to provide no more than a reasonable return on capital employed to each section of the industry, and on the best calculations possible would give no increase but probably some reduction in the total profits of the iron and steel industry. He was circulating a list of the existing and new prices of representative products from which it woud be seen that the increases varied from 10s. 3d. per ton for foundry pig iron to 89s. per ton for tin plates, but for most of the products they were between £2—£3 per ton. The Government appreciated that these increases would add to the task of some industries in maintaining competitive prices in the export markets. But the House would realise that increases of this magnitude in the cost of the raw materials of steel-using industries, though substantial, were nevertheless small in relation to the costs of highly engineered products worth hundreds of pounds per ton of steel. These industries would, moreover, still obtain their steel, in the main, as cheaply as their principal overseas competitors. The Government were, therefore, satisfied that the continuation of the present level of the iron and steel subsidy from the pocket of the general taxpayer would not be justified.

The following is the circulated list:—

IRON AND STEEL PRICE INCREASES

	*Existing Maximum Basis Price.**			*New Maximum Basis Price.*			*Increase.*		
	(Per ton except for Tinplate.)								
	£	s.	d.	£	s.	d.	£	s.	d.
Basic pig iron ...	9	5	0	9	17	6	0	12	6
Hematite pig iron ...	10	2	6	11	16	6	1	14	0
Foundry pig iron ...	9	10	3	10	0	6	0	10	3
Soft basic billets ...	14	7	6	17	1	6	2	14	0
Heavy and medium sections ...	17	1	6	19	13	6	2	12	0
Plates	17	16	6	20	14	6	2	18	0
Rails	16	16	6	19	2	6	2	6	0
Wire rods	18	10	0	21	2	3	2	12	3
Re-rolled bars ...	19	10	0	22	6	0	2	16	0
Re-rolled sections ...	19	0	0	21	16	0	2	16	0
Hot rolled hoop and strip ...	20	5	0	23	1	0	2	16	0
Black Sheets ...	25	1	0	28	16	0	3	15	0
Tinplate (per box)	1	17	5½	2	1	6	0	4	0½
Cold rolled strip ...	29	11	6	31	15	6	2	4	0
Bright steel bars ...	29	13	0	31	2	3	1	9	3
Wire	25	17	6	28	0	0	2	2	6
Forging ingots ...	15	8	0	17	16	0	2	8	0
Alloy steel billets ...	22	17	3	25	6	9	2	9	6
Colliery arches ...	19	16	6	23	0	3	3	3	9

* The prices shown are net, after deduction in certain cases of existing "loyalty rebates." On the Iron and Steel Board's recommendation, the industry have agreed to the abolition of all loyalty rebates and the new prices in the Iron and Steel Control Order are net prices.

MR. GIBSON asked if this new arrangement would increase the cost of steel used in housing.

MR. STRAUSS said it would. He was afraid it would increase the cost of all steel consumed by every industry.

Timber Industry.

MR. J. E. HAIRE asked the President of the Board of Trade if he was now in a position to decontrol the timber industry.

MR. HAROLD WILSON said he was not. He would continue to dispense with controls over the distribution and purchase of timber as fast as conditions permitted. But complete decontrol now of all types of timber would not, in his view, be either practicable or desirable.

HANDLING PRECAST SLABS

A Useful Truck

THE handling of paving slabs, and of similar precast slabs used in prefabricated housing, is always difficult. Their weight is considerable and, even when the slabs can be lifted by one man, they are usually of such a shape that they are difficult to grip. If loaded on to a navvy's barrow, there is the very laborious task of lifting the slabs on and off, and the risk of the load slipping and the barrow overturning, through this or some other cause.

As a consequence, slabs are usually "walked" from place to place, which damages their edges. More often than not, the slabs are dropped rather than placed in position. Thus, breakages are very frequent—as witness the large amount of "crazy paving" sold annually by the highways department of every local authority. The M.O.W. Field Test Unit has been investigating this and other drawbacks to the use of precast slabs in housing and other building work and, as a result, has been able to devise a slab-handling truck, which goes far to minimise these disadvantages.

The construction of the appliance can be seen from Fig. 1. The noteworthy feature is the two cams, lined with a friction material similar to that used in the clutch and brake drums of a car. One of these cams is fixed, and the other is movable by means of a lever. Unlike a warehouse truck, there is no projection at the base to engage beneath the base of the article to be lifted; the weight of the slab is sustained by the cams. To pick up a slab, the truck is laid against it, as shown in Fig. 1, and the movable cam is then swung inwards, to grip the slab. As the truck is pulled backwards, into a wheeling position, the slab commences to slip. This movement, however, immediately causes the movable cam to turn inwards and the slab becomes wedged firmly between the cams. The truck can then be wheeled without any risk of the slab slipping off, no matter how uneven the ground may be. To unload the truck it is only necessary to set it upright. As soon as the lower edge of the slab touches the ground a small upward movement takes place and this instantly releases the grip of the cams on the slab. The truck can then be wheeled away, leaving the slab accurately placed and in an upright position, as in Fig. 1. This illustration shows the first prototype—a truck designed to accommodate large prefabricated walling sections—which has since been modified to take slabs of other shapes and sizes. By making the cams removable, by the addition of a further cross-member to the truck and by providing additional sockets for the cams in the original cross-member, the truck can now be used for large prefabricated slabs (as in Fig. 2), medium-sized slabs (as in Fig. 3), and paving slabs (as in Fig. 4).

Fig. 1.—The truck in upright position, showing construction.

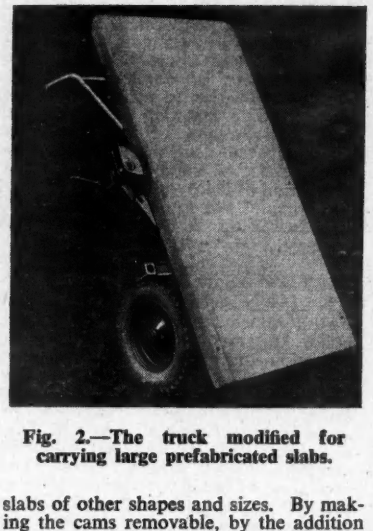


Fig. 2.—The truck modified for carrying large prefabricated slabs.

Fig. 3.—Modification for carriage of medium-sized slabs, showing alternative position for cam.

Both prototypes can be seen at the M.O.W. Field Test Unit, Thatched Barn, Barnet By-Pass, Boreham Wood, Herts, where technical points may be discussed and advice obtained as to the best methods of application.

Anyone wishing to produce a version of the truck that would be subject to the patent application filed by the Ministry can obtain the necessary details and authority to manufacture from the secretary, Ministry of Works, Lambeth Bridge House, London, S.E.1, marking the envelope "For the attention of the Plant Adviser's Division."

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LAW REPORT

Builder's Successful Claim Against Council

COURT OF APPEAL

BEFORE LORD GODDARD (Lord Chief Justice) AND JUSTICES HUMPHREYS AND FINNEMORE.

Holmes v. Bradfield Rural District Council

This matter came before the Court for its decision on two points raised by an award of an official arbitrator, Mr. Done. The case arose out of the proposed erection of bungalows by Mr. J. H. Holmes in the area of the Bradfield Rural District Council. It appeared that the Council had given its consent to the erection of one bungalow on land owned by Mr. Holmes, and he desired to erect 10 others. Certain permissions were given and Mr. Holmes put in hand certain "work" that was necessary for the erection of the bungalows. Finally permission to erect the bungalows was withdrawn and Mr. Holmes now claimed compensation for "work" done prior to the withdrawal of the permission granted.

The official arbitrator raised two questions for the Court's decision. The first was, whether under Section 7 of the 1943 Act, "work" which was rendered abortive by the Order included work on the preparation of plans, which proved abortive, no building work having been begun. The second question was whether Mr. Holmes, by his withdrawal of his appeal in 1946, was entitled under the section to be paid for work done prior to the withdrawal.

The Court, after legal argument, answered both questions in the affirmative.

Mr. Justice Finnemore, who gave the judgment of the Court, said the question was what was the meaning of "work" as set out in Section 7? In his view sub-section 3 of Section 7 dealt with the exact matter. It not only dealt with the case where expenditure had been incurred in carrying out any "work" which was rendered abortive by a revocation order, but contracts entered into for work which was abandoned in consequence of the order. The sub-section also covered the charges made in connection with the "work." Consequently that covered the "work" which was done on the plans.

In this case the Court would take the view that this charge was sensible and just and reasonable. Therefore it followed that the Court would answer the questions in the affirmative.

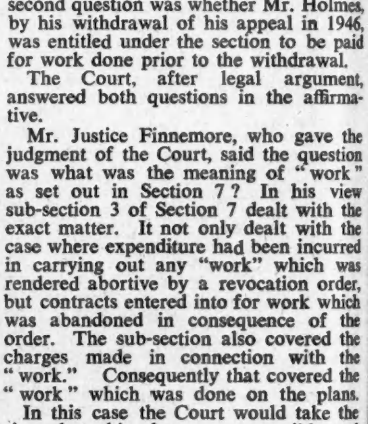

Fig. 4.—The truck adapted to carry paving slabs.

BUILDING TEACHERS' CONFERENCE

Mr. W. H. Ansell's Address on "Building Craftsmanship"

NEARLY 200 teachers of building subjects and members of the industry attended the second Building Teachers' Conference held at the Willesden Technical College on March 19. The President, Mr. R. L. Roberts, C.B.E., M.A., was in the chair.

MR. W. H. ANSELL, M.C., P-P.R.I.B.A., in the course of a paper on "Building Craftsmanship," emphasised that by fine craftsmanship he did not mean such things as wood carving, modelled plaster, ornamental ironwork and the like, but rather the right method and skilful handling of the traditional building crafts of masonry, brickwork, tile roofing and hanging, carpentry and joinery, etc.

He drew attention to the fact that for good results in building craftsmanship certain requirements were essential, and listed these as (1) Designers with a knowledge of what is good and what is not; (2) Public demand for fine craftsmanship; (3) Materials of sufficient quality to justify good craftsmanship; and (4) Trained, skilled craftsmen.

Stressing that he was not an advocate of "Ye Olde," Mr. Ansell drew attention to the popular demand for the traditional type of house using traditional materials, and compared the progress made in other industries, such as the engineering, shipbuilding and steel industries, with progress in the building industry. He suggested that a probable cause for the lag shown by the building industry was that building had to be subordinated in the great national effort. The results of this subordination had been far wider and more disastrous than ever imagined. The restrictions on work, on the use of materials, the draining away from the industry of its skilled manpower and the restricted training of young craftsmen had resulted in a great deterioration of craft skill.

The first work after the war was the repair of war-damaged buildings, using for this work poor materials and often poor craftsmen. Lovers of fine craft work groaned at the standard of work, which it seemed impossible to raise. Gradually, however, an improvement had taken place, but even to-day there was a marked difference between the quality, variety and craftsmanship shown in the fields of electrical and engineering fitments for buildings and houses and the houses and buildings for which these fitments were intended.

With regard to the future, the speaker suggested that the architect or designer must not push too far ahead of the craftsman and his materials, nor must he lag behind them. He should strive to design so that his work acted as a spur both to the craftsman and to the manufacturer of building materials. In hoping that the day of greater freedom for the individual designer and planner was not too far ahead, Mr. Ansell pointed out that most of our difficulties to-day were economic, but he stressed the danger of high maintenance bills in 20 to 30 years' time on the housing schemes of to-day if the present methods were continued.

In his opinion, the good craftsman was the salt of the earth, and his value to the community should not be judged by the results of his craft skill only, but should also be judged by his effect on the English scene and his social and moral influence on the community. He welcomed the present efforts to recruit a good type of apprentice into the basic crafts and to supplement their training by means of part-time day and evening classes.

Teaching Craft Science.

MR. F. T. WEST, who spoke on "The Teaching of Craft Science," said that craft science was intended to assist the craft apprentice in his everyday work by giving to him an understanding of the materials and processes which he uses in his work, thus enabling him to use them to their maximum advantage. In his opinion, materials were more often misused in the building industry than in any other industry, and a sound knowledge of craft science would be of material value to the craftsman, the industry and the public.

In the course of an address on "The Development of Experimental Apparatus for Craft Science," MR. A. W. NOBBS, B.Sc., said his principal aim was to show that craft science gained in value when it was taught to the craft apprentice with the aid of simple apparatus which was within the range of the experience and understanding of the student. He illustrated his views by demonstrating a number of simple pieces of apparatus devised especially to make apparent to the craft student the scientific principles underlying the processes and the materials used by the craftsman.

Mr. Nobbs showed a wide understanding of the many problems confronting not only the student but also the teacher, and his able demonstration and explanation were of value to the enthusiastic teacher of craft science in his efforts to make a really practical approach to this important subject, so often regarded by the craft apprentice as unnecessary.

After an interval for tea the workshop and laboratories of the Department of Building were opened for inspection, and Mr. Keep (head of the department) and his staff were congratulated on the results of their training of young craftsmen.

Inquiries with regard to the Building Teachers' Conference and its work should be addressed to Mr. Alfred Emms, Head of the Department of Building, the Technical College, Gravesend, Kent.

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BUILDING LICENCES AND EXCESS COSTS

County Court Decision Upheld

By a Legal Correspondent.

THE Court of Appeal has now decided that where building work is carried out in excess of the amount specified in a licence the liberty to carry out a limited amount of work on any single property without a licence cannot be prayed in aid to increase the amount authorised by the licence.

This point was dealt with by Lord Justice Scott in the case of *Jackson Stansfield and Sons* v. *Butterworth* (1948 2 A.E.R. 555)—although it was not the decisive factor in that case; but it arose as a specific issue in *Dennis and Co., Ltd.* v. *Nunn*, which was decided by the Court of Appeal last month. In this case the builder undertook in April, 1947, to carry out certain work for the sum of £50, which quotation was accepted by the defendant, who said that she would obtain the necessary licence. She later notified the builder that the licence had been obtained and the work was proceeded with. The licence she had obtained only authorised an expenditure of £34 15s. in respect of work carried out, and when that work was completed and the bill sent in, the defendant claimed that it had not been properly done and paid only £30, which was accepted as a payment on account. The builder sued in the County Court for the balance of the £50 due and the learned County Court Judge decided that although the work had in fact been properly carried out, the expenditure in excess of £34 15s. was in breach of Reg. 56A of the Defence (General) Regulations, 1939, and therefore not recoverable. It was argued for the builder that under the Control of Building Operations (No. 8) Order 1947 (S. R. & O. 1947 No. 74) it was permissible to spend a further £10 plus £4 on the property in question without a licence and that the further £14 should therefore be added to the recoverable amount. This contention was rejected in the County Court and the learned Judge accordingly gave judgment for £4 15s. only.

Upon appeal the Court of Appeal took the view that the proviso to Reg. 56 (a) (2) whereby the Minister may by order permit work up to a specified amount without licence, was intended to apply to small items of work and was not intended to add to the amount of a licence to do a particular work.

The current Order (Control of Building Operation (No. 12) Order 1948) under this proviso allows work to be carried out on any single property up to £100 but the same principle applies, and a price limit specified in a building licence cannot be lawfully exceeded even though the property owner has not availed himself of the £100 licence-free quota.

THE STRUCTURAL USES OF ALUMINIUM

Resistance of Alloys to Corrosion

THE structural uses of aluminium in buildings were described in some detail by COL. W. C. DEVEREUX, C.B.E., F.R.Ae.S., in the course of a paper read before a meeting of the London Section of the Institute of Metals, on March 10. After some introductory remarks he went on to deal with the resistance to corrosion of structural aluminium alloys and said:—The corrosion resistance of aluminium and its alloys is one of their most important properties. They compare favourably with most other non-ferrous metals, which are generally accepted and esteemed for their resistance to corrosion. In the atmospheric exposure tests carried out by the A.S.T.M., a total of 24 different alloys were tested, including copper, bronzes, brasses, chemical lead and tin. In the overall grading at all locations the second place was taken by aluminium-coated duralumin, which was second only to commercial nickel. Why is it, then, that the atmospheric corrosion resistance of aluminium is not more fully recognised and stressed? I believe this to be due to a variety of causes.

Firstly, aluminium is a relatively new metal, and experience of aluminium structures for really long periods is just not available. The metal was first prepared and later produced in commercial quantities in a scientific age; it was known to have a high affinity for oxygen (as judged by the heat of formation of the oxide) and it is difficult to reduce from the oxidised state, hence it was regarded by those who first produced it as being easily oxidised or corroded.

There is still some tendency to regard aluminium as a relatively easily corrodible metal for this reason.

But the most important factor preventing the proper appreciation of the high corrosion resistance of these materials is, in my opinion, that it is not generally realised that the rate at which corrosion takes place in aluminium and its alloys decreases progressively with time, even over a number of years. In this respect aluminium differs markedly from most other commercial metals, in which the rate of corrosion remains constant with time.

In assessing the corrosion behaviour of aluminium, there has been a tendency to expose specimens for a few days, weeks or months and after examining them carefully to assume that the amount of corrosion occurring in say, ten years, will be 20 times that occurring in six months. This gives a completely misleading picture, since when aluminium is first exposed to corroding conditions, appreciable corrosion takes place almost immediately and is very often quite obvious. Naturally this is disturbing to engineers and others who are used to dealing with metals that corrode at a steady rate.

There is a good deal of evidence available on the permanence of aluminium when exposed to many types of atmospheres. Two of the classic examples are the Dome of San Giachino in Rome, which was roofed with aluminium in 1897, and when examined 40 years later showed a mean loss of thickness of only 0.05 mm.; and our own Eros, which has withstood attack by London's atmosphere and Londoners for 56 years.

The speaker went on to support his remarks concerning the relative permanence of aluminium as a structural material by quoting the results of various tests that had been carried out, principally in America.

In the course of some general remarks on light alloy structures, Col. Devereux said that the most important difference between design technique for light alloy and that for traditional materials was the effect of the lower modulus of elasticity because of its bearing upon problems of deflection and the design of compression members.

For stiffness it was always an advantage to use continuous lengths of section wherever possible since the ratio of deflection of, say, a purlin continuous over two spans, to the deflection of a similar member consisting of two lengths simply supported between the spans, was approximately 1:2½, which was roughly approximate to the ratio of the elastic modulus of aluminium to that of steel. It was, however, much more necessary for designers to check the actual deflection of a light alloy member than was the case with steel members, where a section which was strong enough from the bending point of view was usually within the limits of the deflection requirements. This was not always the case with light alloy members, particularly when the span to depth ratio was fairly high.

The elastic modulus had, of course, an important effect upon the strength of compression members. It had been found that the ratio of bending stress to direct stress, particularly in long slender compression members, was very much higher than for equivalent steel sections. This suggested that the cross section of a light alloy strut should be such that the member had a much higher modulus of section without using more material, i.e., it should be designed as a member to resist bending.

For these reasons there had been evolved a system of construction in which the compression members were double channel sections battened together, giving an extremely stiff member for the amount of material used.

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SCOTTISH HOUSING

Steps Towards Balanced Communities

STEPS being taken in Scotland to assist local authorities in the allocation of tenancies were mentioned by MR. J. J. ROBERTSON, M.P., Under-Secretary of State for Scotland, when he spoke at the annual Scottish Conference of the Institute of Housing at the Salutation Hotel, Perth, on March 31.

Mr. Robertson began with some remarks on the appearance of housing estates, and said: This is a matter in which some advance has recently been made. To the distant view trees and grass make the most difference. It is pleasant to see the spacious avenues of the new housing schemes after the narrow vennels of the slums, but it is pleasanter still to see them lined with trees and banks of grass. That must be the concern of the local authority, but it is the gardens which make the most difference to the close view. The state of them depends largely on the tenant, and a tidy garden is the shop window of a happy home. But the tenant must be encouraged by the local authority. Some fencing materials are now less scarce, and in areas where fencing is really needed to protect gardens I hope that authorities will put it up as soon as possible to give their tenants every inducement to look after their own plot of ground.

One authority which has been outstandingly successful in improving the appearance of its estates is the Burgh of Inverness. Another which comes to mind is Lerwick.

Houses for All Classes.

Speaking of housing generally, Mr. Robertson said: Our general economic situation is compelling us to concentrate our resources of labour and materials on essential building—which for housing purposes is generally carried out by local authorities. This, in its turn, means that authorities must build for the needs not only of the lower income groups, but of the population as a whole.

This is the reason why the new Housing Bill is taking the words "working classes" out of the Housing Acts. But this widening of local authorities' housing responsibilities means that the very structure of new communities lie in their hands. This leads me to the controversial subject of choosing tenants. It is at this point that the housing problem becomes a human one—"The house is built; which of the many waiting families is to get it?"

Methods of Allocating Tenancies.

Parliament has put the choice in the hands of the local authorities, and each one has devised its own system. But since the war, not only the demands of the general public, but also the special needs of farm workers, miners and industry generally, have made this task a very difficult one. It seems that the stage has been reached when local authorities themselves would like to have some further guidance on this problem, and the Scottish Housing Advisory Committee have been asked to survey local authorities' existing methods of allocating tenancies.

This survey is now being carried out by a Sub-Committee which is under the chairmanship of Bailie Allan MacLean, of Paisley, and whose members include councillors and officials of local authorities. We may look forward to a report which will give all the 229 authorities in Scotland the benefit of the Committee's experience and judgment.

DIRECT LABOUR IN SALFORD

City Engineer's Views

THE proposal that Salford Corporation should build houses, schools and public buildings by direct labour was approved in principle after a long debate at a recent meeting of the City Council.

At the request of the Direct Works and Markets Committee, the City Engineer, Mr. W. Albert Walker, G.M., prepared a report on the subject in which he gave his views on the respective merits of direct labour and contract works. This report was before the City Council when it made its decision. In his report Mr. Walker mentioned the expansion of the committee's activities in April, 1946, in order to embrace the building maintenance of all corporation properties, the carrying out of repairs to private property upon default of the owners after statutory notice, and the conversion of large houses into flats for the Housing Committee.

His report continued:—

"The maintenance work on property—both Corporation and private—is unlikely to abate and more conversions into flats could be undertaken if suitable labour could be recruited. The work now being performed has risen to the rate of over £100,000 worth per annum. The question in the resolution for consideration is whether the department could undertake the building of new houses.

"The answer is: of course it could—but it is necessary to consider the availability of that work, the conditions for success and the effect upon the important work which is now being done.

"First of all, it should be made clear that there have not been any large sites for houses in Salford for years. The medium sites now under construction—Wardleworth and Fairhope—are both under 200 capacity, and now there is no site left for houses which will take more than about 20. Even so, such sites have now almost all been absorbed.

"My own experience extending over five years in building houses by direct labour proved to me that there were two very desirable factors—continuity and fairly large estates. If the work fluctuated through national policy, a delay in obtaining possession of sites or economic stringency, difficulties and troubles arose rapidly."

Mr. Walker then quotes the first report of the Committee appointed by the Minister of Health to inquire into the cost of house-building, which, in paragraph 198, reads: "From all the evidence available to us we have found no reason to believe that house-building by direct labour is more economical than building under contract, and we consider that direct labour can compete in price with contract work only where there is an efficient and experienced direct labour organisation, and competent supervision, including careful attention to costing. We believe also that direct labour can only be used efficiently where there is continuity of work on a scale sufficient to give regular employment to the local authority's organisation over a long period."

In his report Mr. Walker concludes:—"My own views are that the sites for houses are so few and so small that they offer little scope for a direct labour application. The best results will be obtained by applying direct labour to work for which it is pre-eminently fitted, retaining contract work where good competitive tendering is practicable.

"Maintenance, work in default of owners' alterations to buildings, and conversions of large houses into flats come under the first heading. The erection of large blocks of flats come under the second. In my opinion, the undertaking of the erection of houses in Salford by direct labour would essentially be on a small scale, it would lack continuity, and would detract from the work now being done."

D.S.I.R.

New Members of Research Boards

NEW members of D.S.I.R. Research Boards were announced on March 30. Members serve on the Research Board as individuals, not as representatives of any organisation or body to which they may belong. All the appointments are for four years unless otherwise stated.

Building Research Board: C. W. D. ROWE, C.B., M.B.E., T.D., D.L. (Managing Director, London Brick Company), a former member of the Board; B. SANDERCOCK, O.B.E. (Member of Executive Council, Amalgamated Society of Woodworkers); and R. M. WYNNE EDWARDS, O.B.E., D.S.O., M.C., M.I.C.E. (Messrs. Richard Costain, Ltd.), formerly Director of Constructional Plant, Ministry of Works.

Chemistry Research Board: PROFESSOR M. G. EVANS, D.Sc., F.R.S. (Professor of Physical Chemistry, Manchester University); H. W. T. THOMPSON, D.Phil., F.R.S. (Lecturer in Chemistry, Oxford University); and F. ROFFEY, Ph.D., F.R.I.C. (The Distillers Company, Ltd.).

Forest Products Research Board: Colonel A. H. LLOYD, O.B.E., M.C., T.D. (Imperial Forestry Institute, Oxford); H. J. NUTTALL (Director, Thomas White and Son, Ltd.); V. A. M. ROBERTSON, C.B.E., M.C., M.I.C.E., M.I.M.E. (Chief Civil Engineer, British Railways, Southern Region).

Fuel Research Board: DR. R. HOLROYD (Research Manager, Billingham Division, I.C.I., Ltd. (Appointment, 3 years); SIR CHARLES ELLIS, Ph.D., F.R.S. (Scientific Member of the National Coal Board); SIR CYRIL HINSHELWOOD, Sc.D., F.R.S. (Professor of Chemistry, Oxford University).

Mechanical Engineering Research Board: C. DANNATT, D.Sc., M.I.E.E. (Chief Electrical Engineer and Director, Metropolitan-Vickers Electrical Company).

Pest Infestation Research Board: C. B. WILLIAMS, Sc.D. (Chief Entomologist, Rothamsted Experimental Station).

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NEWS IN BRIEF

The Late Mr. William Chance.

With regret we report the death, on March 27, of Mr. William Chance, a director of Messrs. Barber and Chance, Ltd., builders, 3, Hungerford-lane, W.C.2.

Returning from South Africa.

Mr. W. H. Gough-Cooper, junior Vice-president of the London Master Builders' Association, is returning from South Africa this month. He has been there for some time, and has established a branch business in Johannesburg.

W.D.C. New City Address.

The London (City) office of the War Damage Commission moved on April 4, from "Bankside House," 107-112, Leadenhall-street, E.C.3, to "Equitable House," 45-41, King William-street, E.C. (tel. Mansion House 3477).

Spring Golf Meeting.

The Spring meeting of the Building and Allied Trades Golfing Association will take place on the courses of Moor Park Golf Club on April 26. The hon. secretary is Mr. H. Hill, Monument Station-buildings, E.C.4.

Singles (Medal Play) and 4-ball Foursomes (3/4 handicap) against bogey will be played, and the Dyke Cup will be played for concurrently with the Singles.

Builder to be Mayor of Cambridge.

Mr. W. G. James, M.C., F.I.O.B., a former member of the National Council of the National Federation of Building Trades Employers, has been chosen as mayor-designate of Cambridge. He will take office after election by the Cambridge Corporation in May. Mr. James was President of the Cambridge Association in 1937 and 1947 and President of the Eastern Federation in 1938.

Unofficial Strike.

The men who had been on an unofficial strike at the Carlsbad-street site, King's Cross, returned to work on April 2, in accordance with the direction made three days previously by the Regional Joint Emergency Disputes Commission. At its meeting on April 5 the Commission found that there was no evidence to support the operatives' suspicion that the man concerned had been victimised.

Building Schemes in Ireland.

The Belfast Corporation Housing Committee has acquired the Ballymurphy estate at Springfield-road for housing purposes, and has accepted a £679,218 tender for estate development and the erection of 493 houses. The contractors are Farrans, Ltd., Belfast, and the houses are to be in "No Fines" concrete.

The Corporation Baths Committee is to launch a scheme for new public baths at the Grove playing fields, York-road, at an estimated cost of £220,000.

Cast Concrete Federation's A.G.M.

The 32nd annual general meeting of the Cast Stone and Concrete Federation was held on March 29, when the chairman, Mr. J. W. Panton, emphasised that during the year the Federation had lived up to its objects in promoting, protecting and furthering the interests of members, and the development of the concrete products industry. Many manufacturers of cast stone and cast concrete products, he added, were perhaps unaware of the benefits that accrued from joint consultation and discussion of problems that were constantly arising, but members of the Cast Stone and Concrete Federation had appreciated the opportunities meetings had provided for these purposes.

TRADE NEWS

A Unit Fence.

Metropolitan Concrete Works, Ltd., manufacturers of the "Winslot" unit fence, state that the maximum height of this fence is 9 ft. 5 in. without trellis, and not 6 ft. 11 in., as mentioned in their advertisement which appeared in the April 1 issue of *The Builder*.

A Recent Pamphlet.

The Marley Tile Company, Ltd., of London-road, Riverhead, Kent, have issued a pamphlet, "Roofs Which Cost Less Money," describing how the company can assist in implementing the findings set out in the first report on housing costs of the Girdwood Committee.

A New Company.

Messrs. Christiani and Nielsen, Ltd., inform us that they have recently transferred their business in lightweight concrete for insulation purposes to a newly formed company, Celcon, Ltd., with registered address at 54, Victoria-street, S.W.1. Mr. N. Sommerfelt has been appointed manager of Celcon, Ltd.

A Firm's Annual Dinner.

The annual dinner and dance of Acrow (Engineers), Ltd., was held recently at the May Fair Hotel, when Mr. W. A. de Vigier, managing director, announced that there had been a doubling of the sales within the previous two years. In addition to the company's activities in Great Britain, an up-to-date works had been established in South Africa, while associated companies had been formed in U.S.A. and Canada. Mrs. de Vigier presented cups and trophies to the leading departments.

Advice on Portable Electric Tools.

Messrs. S. Wolf and Co., Ltd., 10, Clifton-gardens, W.9, report the institution of a new scheme for closer contact between manufacturer and user. Periodical invitations are extended to firms using portable power tools and interested in portable electric tool development, to be represented by a responsible technician on a series of user panels. Visitors may see the "Wolf" electric tools in course of design and manufacture, and attend a discussion on the suggested improvement and development of the portable electric tool from the user angle.

New Electrical Sanitation System.

In areas where water-borne sewage is not available sanitation has always been a problem. Messrs. Warren Products, Ltd., 72, Victoria-street, London, S.W.1, have recently announced details of a new system of electrical sanitation. Known as the Electrosan, it consists of two units used in conjunction with a low voltage (6-volt or 12-volt) battery. In the first unit a series of precision balanced plates manufactured from pure electrolytic copper is held by insulated spacing bolts and backed by a plastic screen. This unit clips into any closet container. The second unit is a small control box fitted with adjusted resistance and automatic vacuum switch, controlling the power through a plug connection to the first unit. "When the unit is installed, a simple operation," state the manufacturers, "all that is necessary is to press the button switch after each use. The sewage is then automatically and completely sterilised and deodorised by the Electrosan."

OFFICIAL NOTIFICATIONS

Rates of Plant Hire.

The Minister of Works has made a new Order* which came into effect on April 1, 1949, and replaces the previous Order† governing rates of hire of plant. The main changes are:—(1) The maximum rates of hire for concrete mixers are amended; (2) The 44-hour week and the 8-hour day are substituted for the 48-hour week and the 8¼ and 5½-hour day for rollers, with amended rates calculated on a "per hour" basis; and (3) Separate maximum rates of hire are adopted for scrapers.

Export Licensing Control.

The President of the Board of Trade made an order on March 31, to become operative on April 8, extending export licensing control over a wider range of goods of potential military value. The goods concerned are graphite, mica in certain forms, siloxanes and specified materials containing siloxanes, specified non-ferrous metals and alloys, strontium ore, corrosive resistant lined cocks and valves, high speed compressors, diamond dies, diamond-tipped tools, certain metal working machines, some scientific apparatus, various chemicals, metal in some forms for special purposes, aircraft landing mats, particular types of mine sweeping equipment, and unmounted diamonds (other than cut and polished gems) and diamond powder.

* Control of Rates of Hire of Plant Order, 1949 (S.I. 1949, No. 567.)
† Control of Rates of Hire of Plant Order, 1948 (S.I. No. 792).

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THE SCOTTISH BUILDER

NEW BUILDINGS

Bathgate.—Estimated to cost £250,000, new school to be erected, for which the architect is G. P. Booth, West Lothian County-bldgs., Linlithgow.

Bo'ness.—Estimated to cost £250,000, a new school is to be erected, for which the architect is G. P. Booth, West Lothian County Offices, Linlithgow.

Glasgow.—Additions to be made to W. & J. Martin, Ltd., works, and alterations and additions at Heron-st. and Perth-st., for which the architects are Burnet, Boston & Ball, 180, Hope-st., Glasgow.

Glasgow.—New Church of Scotland halls to be erected at Red-rd., Balarnock, for which the architects are Stewart & Paterson (FF.), 110, Blythswood-sq., Glasgow.

Glasgow.—Offices, also workshops to be erected for Telford, Green, Mackay & Co., Ltd., at Fairlay-st., for which the architects are James Taylor Thomson & MacCrae, 212, Bath-st., Glasgow.

Greenrigg.—At estimated cost of £250,000, new school is to be erected, for which the architect is G. P. Booth, West Lothian County Offices, Linlithgow.

Morayshire.—At West Park site, Elgin, from plans by the Government architects, there will be erected new telephone exchange, a Ministry of Labour Dept., together with a National Insurance Assistance Board buildings.

Stirlingshire.—Estimated to cost £12,000, a new building for the Territorial and Auxiliary Forces Association to be erected at Big-rd., Laurieston, Falkirk.

FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

APRIL 13.

†***Cardiganshire E.C.**—First instalment of extensions to Secondary School at Tregaron (approx. cost £50,000). Rhys Jones (F.), County A., County Offices, Aberaeron, Cards. Dep £2 2s.

APRIL 14.

*†**East Suffolk E.C.**—Additional classroom accommodation at Mills Grammar School, Framlingham. E. J. Symcox (F.), County A., County Hall, Ipswich. Dep. £2 2s. Tenders by May 13.

†***Lincoln (Parts of Kesteven) C.C.**—Workshop block at Technical College, Grantham. County A., County Offices, Sleaford. Tenders by May 7.

†***Surrey C.C.**—Alterations, repairs and redecorations at "Cannizaro," West Side, Wimbledon Common. County A., County Hall, Kingston Dep. £2 2s.

†**Warwick R.D.C.**—52 houses at 3 sites. C., Council Offices, Waterloo-pl., Leamington Spa.

APRIL 16.

Essex C.C.—Repairs, etc., Home for the Blind, Wellesley-rd., Clacton-on-Sea. H. Conolly (F.), County A., Chelmsford.

†***Hayes and Harlington U.D.C.**—39 houses (1st section) at Barnhill estate. E. & S., Town Hall, Hayes, Middx.

APRIL 19.

Caterham and Warlingham U.D.C.—Road and sewer at site No. 25, Meadway. E. & S., Council Offices. Dep. £2 2s.

Isle of Wight R.D.C.—Five pairs of houses at 3 sites. E. L. Smith & Son, Melville-chbrs., High-st., Sandown. Dep. £5 5s. each job.

†***Northants E.C.**—Extensions to Kettering Grammar and High Schools. County A., Northampton.

Tottington U.D.C.—20 houses at Leeman's Hill. L. Kenyon, E. & S., Town Hall. Dep. £2 2s.

APRIL 20.

***Lincoln T.C.**—80 dwellings at Hartsholme estate. City Housing Architect, Stamp End. Dep. £3 3s.

†***Swansea C.B.**—New primary school at East Perlan, Trebboeth. Boro' A., The Guildhall. Dep. £5.

APRIL 21.

***Beckenham T.C.**—Store room, Public Baths, Beckenham-rd. James Dove, B.E. & S. Dep. £2.

Swadlincote U.D.C.—40 houses at Midway estate. F. Silvester White, E. & S., Council Offices Dep. £2 2s.

APRIL 22.

***Kingston-upon-Thames T.C.**—External repairs and redecorations of 318 houses and flats. B.S. Dep. £2 2s.

***Salford T.C.**—Conversion of existing building at Liverpool-st. for Maternity and Child Welfare School Health Centre. City E., Town Hall. Dep. £2 2s.

***York T.C.**—220 houses on Askham-la. estate (East). Chas. J. Minter, City E. and Architect. Dep. £2.

APRIL 23.

Bath E.C.—Adaptations at "Beechfield House," Corsham, Wilts. S., Guildhall. Dep. £2 2s.

APRIL 25.

Brynmawr U.D.C.—30 houses at Clydach-st. S. Short, C., Council Offices. Dep. £3 3s.

***Congleton T.C.**—32 houses at Parson-st. site, contract No. 1. B.E., Town Hall. Dep. £2 2s.

***Corby U.D.C.**—18 shops with living accommodation at Forest Gate estate. Blackwell & Storry, Gold-st.-chbrs., Kettering. Dep. £2 2s.

†***Northants C.C.**—Police houses at various sites. C., County Hall.

***Stockport C.B.**—Additional garage accommodation at Booth-st. Cleansing Dept. Seth Stephens (L.), 15a, Greek-st., Stockport. Dep. £2 2s.

†***Swansea C.B.**—Kitchen and dining-room at new Grammar School, Sketty. Boro' A., Guildhall. Dep. £2.

APRIL 26.

***Essex C.C.**—Day nursery, buildings, and formation of playgrounds at Goodmayes-la., Ilford. B.E., Town Hall. Dep. £5 5s.

APRIL 27.

Clutton R.D.C.—Six houses at Farmborough. Thomas & Morgan & Partners, 23, Gelliwastad-rd., Pontypridd. Dep. £3 3s.

Glastonbury T.C.—Three pairs of houses at Windmill Hill estate. H. N. Alves, 66, High-st. Dep. £2 2s.

APRIL 28.

***Wem R.D.C.**—Six houses at Shawbury. A. R. Williams (L.), Kenneth-chbrs., Dogpole, Shrewsbury. Dep. £2 2s.

APRIL 29.

***Bebington T.C.**—48 houses at Brackenwood, Higher Bebington. B.E. & S., Municipal Offices. Dep. £2 2s.

APRIL 30.

†**Atherton U.D.C.**—52 dwellings, 11 blocks of flatted houses and 8 garages at Brierfield-ave. J. C. Prestwich & Sons, M.A. (F. & A.), Bradshawgate-chbrs., Leigh, Lancs. Dep. £2 2s.

***Axminster U.D.C.**—30 houses at Boxfield-rd. site. Powell & Powell, Grosvenor-chbrs., 3, Lower-terr., Torquay. Dep. £3 3s.

Glamorgan C.C.—Kitchen and dining-room at Upper Llwchwr County Primary School, Lougher. L. R. Gower, County A., County Hall, Cardiff. Dep. £2 2s.

Towcester R.D.C.—Six houses and 4 bungalows with site works at Wicken. G. Berridge, S., Town Hall. Dep. £2 2s.

MAY 2.

Frome R.D.C.—40 dwellings at 5 sites. J. Rogers, architect, Radstock, nr. Bath. Dep. £2.

Kingsbridge R.D.C.—Three pair blocks of houses at South Pool. H. Parsons, architect, Council Offices, Manor House. Dep. £2 2s.

Londonderry T.C.—128 dwellings at Irish-st. site. Hogg & Keay, quantity surveyors, 7, Donegal-sq., West, Belfast. Dep. £5.

MAY 3.

***Guildford T.C.**—52 houses at Bellfields. B.H. & S., Municipal Offices. Dep. £2 2s.

†***Reading C.B.** — Second instalment of Geoffrey Field Primary School. Boro' A., Town Hall.

MAY 4.

Knighton U.D.C.—10 houses at Ludlow-rd. site. S. N. Shrimpton & Son, 18, Bridge-st., Knighton. Dep. £2 2s.

MAY 6.

Rickmansworth U.D.C.—58 houses at Mill Way extension site. E. & S., Council Offices. Dep. £3 3s.

MAY 9.

***Blackwell R.D.C.**—38 houses and 10 bungalows off Doe Hill-la., Tibshelf, Derbys. Architect & Housing Supt., "Dale Close," 100, Chesterfield-rd. South, Mansfield, Notts. Dep. £2 2s.

MAY 11.

***Bournemouth C.B.**—141 houses at Kinson estate. Boro' A. (Room 98). Dep. £2 2s.

***Huntingdon R.D.C.**—Six pairs of houses at 3 sites. H. E. Doe (A.), of Lea, Milner, Doe & Wardley, 4, Market-hill, Huntingdon. Dep. £2 2s.

MAY 13.

***Salop C.C.**—One pair of police houses at Wellington and one house at Albrighton. C., Standing Joint Committee, Shirehall, Shrewsbury.

***Southport C.B.**—Erection of Churchtown Secondary (Modern) School at Marshside-rd. H. D. Dodd (F.), Schools Architect, Town Hall. Dep. £5.

MAY 16.

***St. Austell U.D.C.**—36 houses at Poltair. H. G. King, D.S.C., A.M.I.C.E., E. & S., Municipal Offices. Dep. £2 2s.

"THE BUILDER" PRICES

Reduction in Price of Lead Sheet and Pipe.

Following a decrease in the cost of lead, the Minister of Works has confirmed a reduction of £18 per ton in the maximum selling prices of Lead Sheet and Pipe, for sales on or after April 4.

NO DATE.

Essex C.C.—Adaptations to St. Osyth Training College, Clacton-on-Sea. H. Conolly (F.), County A., Chelmsford.

***Wing R.D.C.**—24 houses with roads and sewers at Pitstone. H. A. Rolls (L.), 15, Bridge-st., Leighton Buzzard. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

APRIL 15.

†***Wimbledon T.C.**—External decoration and repair of requisitioned premises in five sections. B.E. & S. Dep. £1 1s. each section.

APRIL 25.

***Huntingdon C.C.**—Installation of hot water heating and domestic hot water supply at The Chestnuts, Godmanchester. County A., Walden House.

APRIL 27.

***Salop C.C.**—Heating installation at Orleton-la. Primary School, Wellington. A. G. Chant, County A., 5, Belmont, Shrewsbury. Dep. £2 2s.

APRIL 28.

***Ealing T.C.**—Hot water installation to 40 houses. B.E. & S., Town Hall. Dep. £1 1s.

APRIL 30.

West Riding C.C.—Painting of various bridges. County E. & S. Dep. £1.

ROADS, SEWERAGE AND WATER WORKS

APRIL 19.

Chigwell U.D.C.—Reconstruction of Station-rd. E. & S., Council Offices, Loughton. Dep. £3 3s.

A DECORATIVE AND WATERPROOFING

TREATMENT FOR CONCRETE

CEMENT RENDERING

BRICKWORK, ASBESTOS, ETC.

"STIC B"

STONE COVERING

OTHER PRODUCTS

SEMI-STONE COVERING

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(Washable Distemper)

TRANSPARENT

DAMPROOFING LIQUID

"STIC B" PAINT SALES LTD.

69, VICTORIA STREET, S.W.1

WHITEHALL 9958

Frinton U.D.C.—Surface dressing of roads. E. & S.

APRIL 20.

Wandsworth B.C.—Asphalt road surfacing. B.E. & S.

APRIL 21.

Stamford T.C.—Roads and sewers at Drift-rd. estate. B.E., Town Hall. Dep. £3 3s.

APRIL 26.

***Ealing T.C.**—Advance preparation of housing site at Northolt Park Race Course. B.E. & S., Town Hall. Dep. £2 2s.

APRIL 28.

Stafford T.C.—Roads and sewerage at Coton Farm estate. B.E. & S., Mount-st. Dep. £5 5s.

GENERAL BUILDING WORK

(LONDON)

Bromley. — CHURCH REINSTATEMENT. — M.O.W. has issued licences for permanent rebuilding of the west end of nave and complete repair of tower of Bromley Parish Church. Mr. John Harold Gibbons, M.C., F.R.I.B.A., 16, Crooked Usage, N.3, is the architect.

Caterham.—WORKS ADDITION.—Application submitted by Petch & Fermaud, architects and surveyors, 8, Buckingham Palace-rd., S.W.1, for addition to Acme Photo Works, Heath-rd., has been approved by T.P. Committee.

Caterham. — CHURCH REBUILDING. — Town Planning Committee have approved an application submitted by Mr. R. M. Pigott, M.C., F.R.I.B.A., 3, Cromwell-place, London, S.W.7, to rebuild Congregational Church, Harlstone Valley-rd.

Friern Barnet.—HOUSES.—Messrs. Harwood Nash & Co., 42, Chase Side, N.W.14, propose 4 det. houses and 4 det. garages, Oakleigh Park South, N.20.

Wartingham.—HOUSES.—Town Planning Committee have approved application to erect 17 houses (Limpsfield-rd.—8, Verdayne-gdns.—9) submitted by Messrs. Harold Williams & Partners, chartered surveyors, 80, High-st., Croydon.

Wembley. — FACTORY EXTENSION. — Desoutter Bros., Ltd., propose extension of factory and offices on west side of Edgware-rd. at junction with Hay-lane.

Wembley.—FACTORY EXTENSION.—Semo Food, Ltd., propose extension to factory at Empire-parade, Empire-way.

Wembley.—HOUSES.—New Ideal Homesteads, Ltd., propose 8 houses in Harrow-rd., between Linthorpe-ave. and Newlands-close, and one house in Linthorpe-ave.

Wembley.—FLATS.—8 flats proposed at corner of Slough-la. and Church-la. Messrs. Done Hunter & Co., chartered surveyors, 1, Cricklewood-broadway, N.W.2.

Wembley.—LICENSED PREMISES.—Messrs. Courage & Co., Ltd., Horselydown, S.E.1, propose erection of licensed premises in Bridge-rd., nr. junction with Forty-lane.

Wembley.—FACTORY AND OFFICES.—Area Planning Comm. have given consent to erection of factory and offices in Manor Farm-rd., Wembley, at junction with Athlon-rd. Messrs. Allnatt (London), Ltd., contractors, Chase Estate, Park Royal, N.W.10.

Wembley.—HOUSES.—Messrs. George Wimpey & Co., Ltd., 23, Hammersmith-grove, W.6, are considering erection of dwelling-houses on Barnhill estate as follows: The Avenue (27 plots); Wykeham-hill (1); Wentworth-hill (1); Alverstone-rd. (8); Beverley-gdns. (24); Barn-hill (2); Barn-rise (14); East-hill (12); and Uxendon-cres. (1).

Whyteleafe.—FACTORY.—Application by R. H. Sheepshanks, 15, Bloomfield-terr., S.W.1, to erect new factory for North Downs Engineering Co., Godstone-rd., has been approved by T.P. Committee.

(PROVINCIAL)

Ashton-under-Lyne.—B.C. propose 106 new houses at Crowhill estate. Plans by B.S., Municipal Offices. B. of Q. by Harry Eaton, A.I.A.S., 134, Deansgate, Manchester 3.

Ashton-under-Lyne.—T.C. propose central cooking depot off Hill-st. and Higher Wharf-st. at £15,400. A. T. Kemp, B.S., Municipal-bldgs.

Ashton-under-Lyne.—W. T. Rothwell, Ltd., Heath Brewery, Oldham-rd., Newton Heath, Manchester 10, propose rebuilding the Live and Let Live hotel, Margaret-st. Plans by W. Johnson & Sons, 27, Oldham-rd., Miles Platting, Manchester 10.

Bebington.—Mersey Chemical Works, Ltd., propose factory at Bromborough at £300,000. V. Bain (F.), 3, Queen-sq., Leeds 1.—Ches. C.C. propose county college at Carlett Park, Bebington.

Birkenhead.—Vicar and P.C. of Christ Church proposes new church. Plans by L. Barnish (F.), 58, Rodney-st., Liverpool 1.—T.C. propose extensions to crematorium at Landican at £12,000; alterations and improvements to plunge bath at Argyle-st. public baths at £9,500.

Blackpool.—Members of Cavendish-rd. Church propose extensions to church buildings.

Bolton.—T.C. propose repairs, etc., to central fire station at Marsden-rd. at £8,700, also a new fire station at Kay-st. at £42,800.

Bury.—Licensing Justices approved new Duke

of Wellington hotel at junction of Wellington-rd. and Market-st. for Crown Brewing Co., Ltd., Rochdale-rd. Brewery.—New Bury Paper Mills, Ltd., propose alterations at Gigg-la. works.

Bury.—T.C. approved:—Additions at Brewers' Arms Hotel, Bell-la., for Bury Brewery Co., Ltd., George-st.; alterations and additions at New Inn, Walmersley-rd., for Walker & Homfrays, Ltd., Woodside Brewery, Eccles New-rd., Salford 5; alterations at 92, The Rock, for the Saxone Shoe Co., Ltd., Kilmarnock, N.B.; extensions, at Fernhill Chemical Works, for Arthur Ashworth, Ltd.; additions at Pimhole Mills, Mill-st., for Pimhole Mill Co., Ltd.

Chapel-en-le-Frith. — Derbys C.C. propose county modern school. Plans by F. H. Crossley (A.), County A., County Offices, St. Mary's-gate, Derby.

Coventry.—Rev. G. W. Clitheroe, Vicar and P.C. of Holy Trinity Church, propose memorial chapel. Plans by J. N. Comper, West Norwood, London.

Coventry.—E.C. to acquire site at junction of Ford-st. and Fairfax-st. for extension of Wheatley Infants' School; subject to M. of E. approval, application to be made for loan sanction of £310,000 for erection of primary schools at Courthouse Green and Sadler-rd.; application to be made for loan sanction of £306,329 for erection of 234 houses at various sites.

Crook.—Extensions to be made to factory of Marshall Richards, Ltd. Plans by J. Walter Hanson & Son, 46, Northumberland-st., Newcastle.

Darlington.—E.C.'s building programme includes erection of girls' high school at Hummersknott estate; alterations to open-air school and Beaumont-st. clinic.

Darlington.—T.C. applied for sanction to borrow £61,935 for erection of 56 flats at Haughton.

Derby.—Mitchells & Butlers, Ltd., Cape-hill Brewery, Smethwick, propose Argosy hotel at Manor-rd. at £41,000.

Durham.—C.C. propose three child clinics. Plans by G. R. Clayton, County A., Court-lane, Durham.

Eston.—M.H. approved erection of 59 houses at Jubilee-rd. at £71,706

Grantham.—Regional Hospital Committee propose extensions at Grantham and Kesteven General Hospital at £20,000. Plans by L. J. Lenton & Partners (F.), 16, Broad-st., Stamford.

Halesowen.—T.C. propose development of a 100-acre site at Hawley Green, Lapal, for housing estate.

Hartlepool.—T.C. to proceed with erection of 120 houses at West View site.

Hull.—Smith & Nephew, Ltd., 5, Neptune-st., propose new works.—T.C. propose 20 houses at Stocksbridge-la.

Leeds.—British Railways propose alterations and additions to refreshment room at city station at £8,000.

Manchester.—T.C. approved:—Printing works at Cheetwood-rd. and Broughton-st., Cheetham, for Proprietors of the "News of the World" (Ellis, Clark & Gallannaugh (F.), 58, Grosvenor-st., London, S.W.1); extensions to works, Lord-st., Cheetham Hill-rd., for William Timpson, Ltd.

Manchester.—T.C. approved:—Additions to works, Corbett-st., Clayton, for Hardman & Holden, Ltd., Manox Works, Collyhurst; alterations and additions to works and offices, Hall-st., for Booth & Others, Ltd. (S. Birkett (F.), 103, Portland-st.); alterations and additions to No. 1 Dock, Pomona Dock, Cornbrook, for A. Guinness, Sons & Co., Ltd. (H. S. Fairhurst & Son (F.), 55, Brown-st.); additions to works, Vickers-st., Collyhurst, for Hardman & Holden, Ltd.—T.C. propose welfare centre and day nursery at Old Manor House, Wilmslow-rd., Didsbury.—T.C. propose community centre at Burton-rd., Withington.—Rev. M. M. Hannen, P.P. St. Joseph's, Plymouth-gr., Longsight, propose extensions to schools at Victoria Park at £150,000.

Newcastle (Staffs).—T.C. approved:—Residential hotel at Clayton-rd. and Seabridge-la. for Parkers Burslem Brewery Co., Ltd. (R. Scrivener & Sons, architects, Howard-pl., Hanley, Stoke-on-Trent, Staffs); restaurant, Ironmarket, for Silverdale Equitable Industrial Co-operative Society, Ltd., Crown-st., Silverdale.

North Riding.—C.C. propose to set up experimental health centres at Eston and Pickering. Plans by County A., J. Catchpole, County Hall, Northallerton.

Northumberland.—E.C. propose to commence work by autumn on construction of mining technical college at Ashington. Plans are by County A., County Hall, Newcastle-on-Tyne.

Nottingham.—Regional Hospitals Board propose extensions at General Hospital, Park-row. Plans by Bromley & Cartwright (F.), 6, Clarendon-rd.

Oldbury.—Worcs E.C. propose primary school at Causeway Green. L. C. Lomas (F.), County A., 60, The Tything, Worcester.

Oldham.—T.C. approved:—Alterations at La Scala cinema, Hollinwood, for Directors; alterations and additions at Globe Inn, West-st., for Wilson's Brewery Co., Ltd., Monsall-rd. Brewery, Newton Heath, Manchester 10.

Ormskirk.—Rev. R. B. Teeley, P.P., proposes secondary school at Prescot-rd.

Radcliffe.—T.C. approved:—Development of land at Ringley-rd. for J. Lewis; extensions to works at Haddock-st. for Mosley Thread Co., Ltd.; works canteen at Red Bank Mill, Woodhouse, for Hambly & Co., Ltd.—T.C. received M.H. allocation for 70 houses at Ainsworth site.

Rotherham.—T.C. approved:—New works and garage, Sheffield-rd., Steel, Peech & Tozer; works, Old Sheffield-rd., for W. Coldwell; shops and offices at High-st. for Union Cinemas, Ltd.

Settle.—R.D.C. propose 26 houses at Back Gate site, Ingleton.

Sheffield.—Major G. G. Pace (A.), 27, Front-st., Acomb, York, has been appointed architect for new church of St. Mark, Broomhill.

Stafford.—T.C. propose civic restaurant on central site.

Stanley (Co. Durham).—Extensions to be made to pithead baths at Morrison Busty Pit. Plans by Miners' Welfare Commission, 42, Great Portland-st., London, W.1.

Stockport.—Walker & Homfrays, Ltd., Woodside Brewery, Eccles New-rd., Salford, propose rebuilding Royal Oak Hotel, Castle-st., Grenville-st. and Gloucester-st.—R.C. Authorities, Rev. Dr. Goodyear, P.P., propose secondary school at Nangreave-rd.—T.C. propose nursery school off Whitehill-st.

Stone.—R.D.C. approved rectories for Rev. C. W. Salt at Standon and Rev. L. F. Booth at Swynnerton.

Wigan.—R.C. Authorities propose secondary schools at Newtown, Springfield and Whelley at £360,000.

Wilmslow.—U.D.C. received allocation of M.H. for 62 additional houses.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Billingham-on-Tees. — Eight bungalows at Monkseaton housing estate, for U.D.C. Architects, Kitching & Co., 21, Albert-rd., Middlesbrough: *H. A. Dawson (Estates), Ltd., Chatsworth-gdns., Wolviston, Billingham-on-Tees, £7,310 (revised tender).

Blaydon-on-Tyne.—New Offices, canteen and workshops, for Harriman & Co.: *Shield Bros., Back Park-ter., Swalwell, Co. Durham.

Bradford.—Six houses at Middle-la., Clayton, for T.C.: J. T. Castle (F.), City A.: *E. Ambler, Clayton Joinery Works, Clayton, Bradford, £7,546.

Brighouse.—24 houses at Deep-la. estate, Clifton: *J. & A. Hare & J. Lister, Batley, £29,481; 14 bungalows at Stoney-la. estate: J. Jagger & Sons, Ltd., £11,763 (both subject to M.H. approval).

Brighton.—Erection of factory for Typewriter Sundries Co., Ltd., at Hollingbury estate Light Industrial area: R. Seifert (F.), architect. D. J. Howe, M.I.C.E., M.I.Mun.E., B.E. & S.:—Quantities by MacConville Fraser & Symonds.

James Longley & Co., Ltd., Crawley, Sussex	£114,352
C. H. Coates, Ltd., Davis-rd., Surbiton	£113,603
Richard Costain, Ltd., Dolphin-sq., S.W.1	113,000
Ringmer Building Works, Ltd., Ringmer, Lewes, Sussex	112,914
Gorham Contractors, Ltd., 4, The Crescent, Goring-rd., Goring-by-Sea, Sussex	111,673
*Rice & Son, Ltd., 15, Stockwell-rd., S.W.9	110,425

(Six lowest tenders.)

Bury.—Laboratory off Cambridge-rd., Blackford Bridge, for The Eagle Dyeing Co., Ltd. Plans by Architect's Dept., British Cotton and Wool Dyers' Association, Ltd., 22, Cumberland-st., Deansgate, Manchester 3: *Clarke & Spencer, Ltd., Elton Joinery Works, Bury.

Caterham and Wartlingham.—10 houses at Mill House estate, for U.D.C.: *R. J. Clarke & Co. (Builders), Ltd., 87, Whyteleafe-hill, Whyteleafe, £12,615 (subject to M.M. approval).

Cheadle, Staffs.—12 houses at Weston Coyney, for R.D.C. J. W. Burton, S., Council Offices, Leek-rd.: *J. A. Bailey, Tape-st., Cheadle, Stoke-on-Trent, £15,883.

Cheshire.—Works for C.C. E. M. Parkes (F.), County A., The Castle, Chester. Child Welfare Centre at Huntington: *Cartwright Bros. (Little Sutton), Ltd., Dudleston-rd., Hooton, nr. Birkenhead, £5,240; reinstatement of Cranford Lodge: *Unit Construction Co., Ltd., Bentham-dr., Litherland, Liverpool, £11,211; alterations and additions at county primary school, Poynton, nr. Macclesfield: *G. Roylance & Co., Ltd., Waters Green, Macclesfield, £21,013.

Coventry.—Offices, workshops and stores at Torrington-av., for Potteries Plant Hire Co. D. Payne, architect, 26, Warwick-row: *E. K. Yonell & Sons, Ltd., 503, Walgrave-rd., Coventry.

Coventry.—300 houses at Radford, for T.C. D. E. E. Gibson, M.A. (A.), City A., 1a, Warwick-row: *Rexford (Builders), Ltd., Newborough-rd., Coventry, £380,400.

Darlington.—10 houses and eight flats at Haughton site, for T.C. A. E. Tornbohm, Boro' A.: *Nox, Ltd., Darlington (approved by M.H.).

Darlington.—Six houses at Swaledale-av. and Farndale-cres.: *Bussey & Armstrong, Brinkburn-rd., Darlington.

Durham.—Completion of boys' dept. at Stockton, Oxbridge-av. Grammar School, for County E.C. County A., G. R. Clayton, Court-la., Durham: *G. Wimpey & Co., Ltd., Jesmond, Newcastle-on-Tyne, £81,560 (approved by M.E.).

Durham.—Additional classrooms at Bowburn Council school: *I. Berriman, Woodlands Joinery Works, Fencehouses, Co. Durham; additional classrooms at County School, Greenside: *M. S. Fails, Ltd., 199, Coatsworth-rd., Gateshead; additional classrooms at Castle Eden School; *Snowdon Bros., Bedford-rd., Sunderland.

Durham.—Additional classrooms and dining-room at Castletown School: *R. Hudson & Sons, St. Mark's-cres., Sunderland.

East Ham.—40 maisonettes at Gooseley-la. estate, for T.C. Chief Housing Officer, Town Hall: *C. H. Beckwith, 16, Keith-way, Southend-on-Sea, Essex, £72,826.

Egham.—Houses at Wapshott Farm estate, for U.D.C.:—

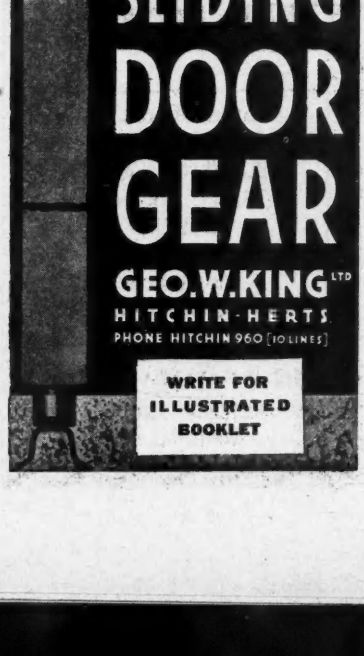
Sears, W. J., Ltd., Egham	£54,911
Wells, E. H. & L., Windsor, Berks ...	53,099
Clifford, B., Ltd., S.W.17	53,059
Gorham (Contractors), Ltd., Goring-on-Sea	52,672
Carters (Modern Builders), Ltd., Kingston-on-Thames	51,601
Lewood, Ltd., Cobham, Surrey	50,164
Farmer, J. (Builders), Sunbury-on-Thames	49,158
Taylor, J., Middlesex	46,657
Phillips & White, Staines	46,657
*Tarrant Builders, Ltd., Virginia Water, Surrey	46,579

Greenock.—Erection of shops, etc., for Corporation:—Mr. R. L. Rankine, architect (Master of Works Office, Wallace-sq., Greenock): Excavator, brick and building works, etc., *Robert Kirkwood, Ltd., 4, Houston-st., Greenock; carpentry, joinery and allied works, etc., *Direct Labour; plumber and sanitary engineering works, etc., *John Paterson & Son, Hunter-pl., Greenock; plaster, lathing and allied works, etc., *Hugh McCubbin, Greenock; roughcast work, etc., *James Bertram & Son, Melville Cross, Motherwell; pre-concrete roofing works etc., *Girlings Ferro-Concrete Co., Ltd., Glasgow; glazing and other works, *Direct Labour; asphalt roofing works, etc., *The Scottish Speedwell Co., Ltd., Glasgow; electrical fittings and engineering, etc., The Scottish Western Electrical Contractors, Ltd., Glasgow.

Grimsby.—88 houses and 24 old people's houses at Weelsby-rd. site, for T.C.: *Taylor & Coulbeck, Ltd., Cleethorpes, £65,925 (50); *J. Bratton & Co., Grimsby, £48,493 (38); *Proctor Bros. (Grimsby), Ltd., £19,920 (24 old people's houses).

Hemel Hempstead.—10 houses at Buckwood-rd., for R.D.C. E. & S., 2, Marlowes: *E. W. Tomblin, 16, Wesley-rd., Markyate, £11,991 10s.

Leeds.—154 houses at Cookridge estate and Belle Isle estate, for T.C. R. A. H. Livett, O.B.E. (A.), City A., Priestley House, Quarry Bank: *Walter Thompson, Ltd., North End.



Northallerton (126); *W. Brown, 56, Victoria-av., Leeds 9 (28).

Liverpool.—Works, for City Council: Alterations and additions at Central Police Office, *Marshall Bros. (Builders), Ltd., 3-5, Salop-st., Liverpool 4, £12,712 (subject to Home Office and M.H. approval); 48 flats at Sussex-st. *Tysons (Contractors), Ltd., Dryden-st., Liverpool 5, £73,000; installation of 6 lifts to flats at Gerard-cres. and Gerard-gdns., *Express Lift Co., Ltd., 320, Tower-bldgs., Water-st., Liverpool 3, £15,600 (all subject to M.H. approval); kitchen and dining-room at Roscommon-st. Secondary Modern School, *J. & E. Aspinall, Ltd., £14,230 (subject to M. of E. approval); alterations and additions at "Norley Bank," nr. Frodsham, Ches., *A. F. Illidge & Son, 2, Main-st., Frodsham, £8,406 (subject to Home Office approval).

L.C.C.—Contracts exceeding £2,500 in value placed by L.C.C. during period ended March 31:—Adaptation of old reservoir at Northern Outfall works, Crowley, Russell & Co., Ltd., S.W.1.

¶London (Admiralty).—*Delph*, R.N. Depot, canteen, R. S. Ainscough, Ltd., The Sound, Delph, nr. Oldham. *H.M.S. Melita*, South Shields. Adaptation of drill shed, Hastie D. Burton, Ltd., King-st., North Shields. *Scarborough*, W/T Station, Hostel for trainees, E. Hunter (Scarboro'), Ltd., Belle Vue Works, Beaconsfield-st., Scarborough. *Finnart*, Loch Long, Foundations for tanks, Jas. Laidlaw & Sons, Ltd., 12, Playfair-st., Bridgeton, Glasgow S.E.

¶London (Air Ministry).—Contracts to value of £500 or over for week ended April 2. *Erection of structural steelwork*: G. H. Miller & Co., Ltd., London, E.7. *Building work*: A. Richmond & Sons, Retford, Notts; F. R. Hipperson & Son, Ltd., London, E.C.2.

¶London (M.O.W.).—Contracts placed by M.O.W. during week ended March 26:—*Anglesey*: County Prim. School, Amlwch., Temporary school bldgs., Pochin (Contractors), Ltd., King-st. Works, Middlewich, Cheshire. *Ayrshire*: Girran Prim. School, Ayr, Kitchen, J. Barclay, West Langland-st., Kilmarnock. *Cambs*: Cambridge, Telephone repeater station, Coulson & Son, Ltd., 37, St. Andrew-st., Cambridge. *Ches*: Eastway School, Wallasey, Kitchen and dining-room, Edward Thomas (Contractors), Ltd., 74, Woodchurch-la., Birkenhead. *Glouc*s: Coleford Sec. Mod. School, Temp. school bldgs., S. J. Kear & Son, Ltd., Broadwell, Coleford, Gloucester. *Hampshire*: Basingstoke Sorting Office, Extension, H. J. Goodall & Son, Ltd., 56, Queen's-rd., Basingstoke; Hamble Mod. Sec. School, Southampton, School classroom, E. H. Burgess, Ltd., Oak Works, Augustine-rd., Northam, Southampton; Hardley Sec. Mod. School, Southampton, School classroom, Truckell & Barter, Ltd., Salisbury-rd., Totton, Southampton; Basset Green Schls., Southampton, Kitchen and dining-room, G. T. Harley 12, Almond-rd., Freemantle, Southampton; Ball Hill, Farnborough, Supply, delivery & construction of hollow tile floor & roof construction, F. Bradford & Co., Ltd., Angel-rd. estate, Edmonton, N.18. *Lancs*: Hollingwood Sec. Sch., Oldham, Hutted accommodation, E. E. Coleman, Ltd., Waverley-rd., Sale; Castle Hill School, Bolton, Hutted accommodation, Drapers, Ltd., Tonge Fold, Bury-rd., Bolton. *Lincs*: Min. of Nat. Insce., Norfolk-st., Boston, Standard hutting, Wm. Wright & Sons (Lincoln), Ltd., 45, Main Ridge, Boston, Lincs. *Renfrewshire*: Ladyburn Prim. School, Greenock, Dining-room and scullery, J. Preston & Sons, Ltd., 26, Inverskip-st., Greenock. *Sussex*: Worthing (T.O.B.), Hostel, Lavender McMillan, Ltd., 54, Cheam Common-rd., Worcester Park., Surrey. *Yorks*: Sub. Post Office, Market-st., Heckmondwike, Alts. and extensions, Walter West & Son (Dewsbury), Ltd., Highgate, Dewsbury; Hull, Head Post Office and Tele. Exchange, Higgs & Hill, Ltd., 33, St. Paul's-st., Leeds 1.

¶London (War Dept.).—Works contracts placed by War Dept. for week ended March 26:—*Notts*: Building work, A. H. Taylor (Nottingham), Ltd., Nottingham. *Salop*: Building work, M. A. Boswell (Contractors), Ltd., Wolverhampton. *Staffs*: Building work, McKeand, Smith & Co., Ltd., Wolverhampton. *Ches*: Road work, J. W. Flather, Ltd., Ellesmere Port. *Cornwall*: Building work, Staverton Builders, Ltd., Totnes. *Sussex*: Miscellaneous work, G. F. Baldwin, Kemsing, Sevenoaks.

Manchester.—Works, for City Council: 20 aged persons' dwellings at Baguley Hall, *Direct Labour; 7 shops, 8 flats and 7 garages at Greenwood-rd., Northenden, *C. Musker Bros., Ltd., Swinton (both subject to M.H. approval).

Middlesbrough.—Plant and tyre stores at Askwith-rd., for Brunton's Northern Dairies, Ltd.: *C. J. Boyd, Ltd., Emmerson-st., Middlesbrough.

Newcastle.—School meals accommodation at St. Lawrence and Welbeck-rd. schools: *R. W. Bell, Ltd., New Mills, Barrack-rd., Newcastle.

Newcastle.—Dining-rooms, etc., at the Convent of the Sacred Heart. Architect, J. Walton Taylor, Darncrook, Newcastle: *John Jackson & Sons, Corporation-st., Newcastle.

North Shields.—12 houses at Broadway, Cullercoats. Architect, J. R. Wallace, Northumberland-sq., North Shields: *A. & E. Brannen, Trevor-ter., North Shields.

Northumberland.—School canteen at Hartburn: *Jonathan Wilson, Oldgate, Morpeth; school canteen at Stannington: *J. Urpeth, Front-st., Bedlington, Northumberland; school canteen at Whitley South: *Wilkinson & Topping, Cramer-st., Gateshead; canteen at Cowburn Council School: *Shield & Nicholson, Ryton-on-Tyne.

Otley.—36 houses at Weston-la. estate, for U.D.C. J. A. A. Pratt, S., Council Offices, North-parade: †M. Harrison (Leeds), Ltd., Posthill Quarries, Farnley, nr. Leeds.

Penrith.—Further 32 houses at Scaws estate: *Robert Reay, £42,392 (subject to M.H. approval).

Portsmouth.—Conversion of Nos. 4-9, Portland-ter., Southsea, into flats, hostel and club premises, for T.C. R. Lewis Reynish (A.), Kent Lodge, Queen's-cres., Southsea. Quantities by R. G. Barclay, A.R.I.C.S.:—

Osborne & Parsons, Portsmouth	£23,720
H. Reynolds, Southsea	23,157
Jeffrey & Sons (Hove), Ltd., Hove 3	22,300
Henry Jones & Son (Portsmouth), Ltd., Southsea	22,110
Cortis & Hankins, Ltd., Portsmouth	21,975
Roy Corke, Ltd., Southsea	21,442
Bailey & Claxon, Ltd., Portsmouth	21,297
John Lay & Co. (Portsmouth), Ltd., Portsmouth	20,986
Portsmouth, Gosport and District Builders' Guild, Ltd., Portsmouth	19,893
‡H. Howard & Son, Ltd., 45, Pearl-bldgs., Commercial-rd., Portsmouth	18,780

Ringwood and Fordingbridge.—Three pairs of cottages at three sites, for R.D.C. Frank Andrews (L.), chartered architect, 46, High-st. Roadworks and drainage, The Bartons, Fordingbridge, and roadworks, Hurst-rd., Ringwood: *B. L. Shutler, 121, Northfield-rd., Ringwood; block of four dwellings, Woodgreen: *S. M. Mulley, Ltd., Purewell-bldg. Works, Christchurch; one block of three single-storey dwellings, Whitsbury: *H. Willitts, Salisbury-st., Fordingbridge.

Rochdale.—Reconstruction work at Dob Wheel Mill, for Joseph Gundry & Co., Ltd.: *Lear & Heywood, Ltd., Law-st., Castleton, Rochdale.

Rothwell, Yorks.—12 houses for U.D.C. C. A. E. Snell, S., Civic-bldgs.: *P. J. Parrott & Co., Ltd., Church Side, Methley, nr. Leeds. £15,529.

Scottish Special Housing Association, Ltd.—Contracts placed for period February 17-March 14.—(a) *Site Servicing*: Springhill and Gateside, Lanark (26 Trad., 200 Atholl), Lanark C.C., Surfacing rds. and footpaths. Logan House, Lugar (98 Myton-Clyde), Myton, Ltd., Mossend, Bellshill, Tile and field drainage. (b) *House Erection*: Townhead, Coatbridge (56 Hilcon), R. K. McLean & Co., 141, Bath-st., Glasgow, Floor finish. Crosshill & Meadows (100 Weir), Myton, Ltd., Bellshill. Underbuilding. Drumpellier, Coatbridge (two Trad.), Louden & Inglis, Calder-st., Coatbridge. All trades (extension of existing contract). Stromness (12 Trad.), W. S. Harvey, 19, John-st., Stromness. All trades. Lerwick (four trad.), W. Fraser, Freefield-rd., Lerwick. All trades. Portree, Skye (4 Trad.), Jas. Miller & Partners, Ltd., Edinburgh. All trades. Kelloholm, Kirkconnel (100 Weir), Robison & Davidson, Ltd., St. Catherine's-gate, Dumfries. Boundary marking posts. Watling-st., Motherwell (50 B.I.S.F.), Murdoch Mackenzie, Ltd., 24, Wilson-st., Motherwell. Asbestos sheets and coal boards. Harthill (100 Trad.), Alexander Thomson, 132, Main-st., Bellshill, Plumber. Watling-st., Motherwell (42 Weir), A. M. Tweedie & Co., Ltd., Bilbao-st., Glasgow, Privet hedging. Sandyflats, Johnstone (26 concrete), Wm. Briggs & Sons, Ltd., 200, Old Dumbarton-rd., Glasgow, Roof covering; A. M. Macdonald & Co., 24, Davaar-st., Glasgow, Alterations to parapet walls. Wilton-rd., Mauchline (76 Trad.), M. Muir & Co., Ltd., 6, Bank-st., Kilmarnock. Excavator, brick, etc. Douglas, Gateside, Lanark (196 Atholl), Wm. Gibson & Co. (Builders), Ltd., St. James-st., Paisley, Boundary marking posts. Fivestanks, Broxburn (150 Trad.), James Strang & Sons, 48, Bellevue, Polmont, Boundary fencing. Mauchline (76 Trad.), Anderson & Innes, Green-st., Kilmarnock, Carpenter and joiner; James Thow, Ltd., 32, George-st., Ayr, Glazier; M. J. Callaghan, Ltd., Cassells-rd., Maybole, Plumber; Wm. Shaw & Co., 160, High-st., Irvine, Plaster; Murray Electricians, Ltd., 11, Alexandria-av., Prestwick, Electrical; Alex. McKerracher, Ltd., 119, Main-st., Prestwick, Painter; M. J. Callaghan, Ltd., Cassells-rd., Maybole, Slater and roughcast. Gorebridge (156 Trad.), N. Thomson, Croft-st., Dalkeith, Excavator, brick, etc.; P. Nimmo & Sons, Ltd., Glasgow-rd., Edinburgh, Carpenter and joiner; Cunningham, Dickson & Walker, 31, Frederick-st., Edinburgh, Glazier; Shaw & Gibson, 9, N. St. David-st., Edinburgh, Plumber; N. Thomson, Dalkeith, Plaster; Boyne, Smith & Wylie, Ltd., 22, Nelson-st., Edinburgh, Electrical; Middleton & Son, Ltd., 22a, Dublin-st., Edinburgh, Painter.

Selsdon.—12 houses at White-hill, Kinver, and at Swindon, for R.D.C. F. Bagley, A.M.Inst. C.E., S., Council Offices, Wombourne, nr. Wolverhampton: ‡D. B. Evans (Wolverhampton), Ltd., 22, Waterloo-rd., Wolverhampton. £15,574.

Sheffield.—Extensions at Dundee Works, Trafalgar-st., Milton-st. and Eldon-st., for J. Billam, Ltd, J. J. Giddens, architect, 2, Cambridge-st.: *Henry Boot & Sons, Ltd., Banner Cross Hall, Ecclesall-rd., Sheffield.

Sheffield.—Remploy factory for Disabled Persons' Employment Corporation, 25, Buckinghamgate, London, S.W.1: *M. J. Gleeson, Ltd., 822, Chesterfield-rd., Sheffield 8.

Southampton.—Reconstruction of war-damaged area at Town Quay, for Harbour Board: *Yorkshire Hennebique Contracting Co., Ltd., Viaduct Works, Kirkstall, £67,037.

Southampton C.B.—Alterations and extensions to Hillfield Home for the Blind, for C.B. Boro' A.: ‡Mullen & Lumsden, Ltd., 151, Romsey-rd., Shirley, Southampton, £3,795.

South Shields.—Completion of new large stores at Westoe-rd., for Jarrow & Hebburn Co-op. Society, Albert-rd., Jarrow. Plans by C.W.S. Architects' Dept., 90, Westmorland-rd., Newcastle-on-Tyne: *C.W.S. Building Dept., West Blandford-st., Newcastle-on-Tyne.

South Shields.—Reconstruction of stores at King-st., for F. W. Woolworth & Co., Ltd., London: *Direct Labour.

Staffs.—Extensions at Alleyne's County Secondary Grammar School, Stone, for C.C. A. C. H. Stillman, Architect & S., County Ed. Offices, Earl-st., Stafford. Quantities by Henry Vale & Sons, Wolverhampton: *Tideswell Bros., Basford Works, Brick Kiln-la., Basford, Stoke-on-Trent, £30,752.

Standish-with-Langtree.—18 houses at Coronation-rd., for U.D.C. J. C. Prestwich & Sons, Bradshawgate-chbrs., Leigh, Lancs: *Alex. Wigan & Sons, Ltd., Rose Bridge Works, Manchester-rd., Ince, Wigan, £22,831.

Stockport.—50 houses at Canal Bridge Farm estate, for T.C. Wm. F. Gardner, M.Inst.C.E., B.S., Town Hall: †Hugh Owen & Son, Ltd., 431, Buxton-rd., Great Moor, Stockport.

Stockton-on-Tees.—18 houses at Kingsley-rd. and Green-la. Architect, G. P. Stainsby, 57, High-st., Stockton-on-Tees: *Moorhouse & Barker, Thornaby-on-Tees.

Stone.—Six houses at Chebney site, for R.D.C. W. Hawkes, S., Rural Council Offices: *J. H. Broadhurst, Blythe Bridge, Stoke-on-Trent, £9,223.

Sturminster.—Works for R.D.C. J. S. Nevill, quantity surveyor, Tregarnhen House, 24, West-st., Wimborne. Four houses, Ibberton: †L. A. Walter, West Moors; six houses, Manston: †F. B. Young, Child Okeford; eight houses and roads, Okeford Fitzpaine: †L. A. Walter, West Moors; two houses, Hazelbury Bryan: †H. Mears, Melcombe Bingham.

Sunderland.—Adaptation of Milton Hall, Brampton, as a school for educationally subnormal children, for E.C. Education architect,

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Sunderland.—Welding sheds, etc., at W. Doxford & Sons shipyard: *Brims & Co., Ltd., Pandon-bldgs., City-rd., Newcastle.

Tarvin.—Six houses at Hockenhull-la., for R.D.C. T. Pritchard, E. & S., Council Offices, Westminster-bldgs., Newgate-st., Chester: *T. Nixon & Son, Kelsall Hill, Kelsall, nr. Chester, £7,194.

Tottenham.—76 flats, 24 old persons' dwellings and one off-licence, for B.C.:—

Leach, Waltham Cross	£172,050
Stox, Wood Green	169,554
Bunting Construction, Ltd.	167,048
Rowley Bros., Ltd., N.15	166,720
Tersons	161,500
Troy	156,600
Tottenham B.C. and Labour	154,520
Clarke Barton & Co.	146,979
Unerco Construction, Ltd.	143,532
C. & F. Bryen, Ltd.	141,684
*Gorham (Contractors), Ltd.	139,332
Kind & Co.	136,427

Tynemouth.—262 houses at Marden neighbourhood unit, for T.C. D. M. O'herlihy, B.E., 19, Howard-st., North Shields: *William Leech, Ltd., 2, Clayton-st., Newcastle-on-Tyne.

Tynemouth.—Alterations at Camden-st., for Wesleyan and General Assurance Society: *E. C. Leighton & Co., George-st., North Shields.

Tynemouth.—Further six houses at east end of North Shields, for T.C. B.E., 19, Howard-st., North Shields: *Direct Labour.

Warrington.—24 additional houses, Popiars-av. site, for T.C. J. Y. Hughes, M.Inst.C.E., B.S.: *W. L. Challinor, 2, Brian-av., £27,832.

West Lancashire.—20 houses and four flats at Town Green site, Burscough, for R.D.C. A. G. Crawford, S., Derby-st., Ormskirk: *J. & R. Woods (Builders), Ltd., Burscough, Ormskirk, £28,820.

Westmorland.—Major extensions at Windermere Grammar School, for C.C. R. H. Crompton (A.), County Hall, Kendal: *George Wimpey & Co., Ltd., Orchard House, Fenwick-ter., Newcastle-on-Tyne 2, £14,699.

Weymouth and Melcombe Regis.—13 houses at Westhaven estate, Abbotsbury-rd., for T.C. B.E. & S., 6, Pulteney-bldgs.: *B. Bryant, 57, Monmouth-av., Weymouth, Dorset, £16,167.

Whitley Bay.—Four houses at Seatonville neighbourhood unit, for U.D.C.: *Castle, Closefield-gr., Whitley Bay.

Woolwich.—Dwellings at Coldharbour estate, for B.C. Scheme 4 (c): *Haise & Sons (54); Scheme 7 (b) and (c): *Direct Labour (98); Scheme 8 (a): *Thomas & Edge, Ltd. (56); Scheme 8 (b): *E. H. Smith (Croydon), Ltd. (56). (Prices to be negotiated subject to M.H. approval.)

Worcester.—12 houses and 24 flats at Newtown No. 2 site, for T.C. H. A. Mackrill, C.S. Municipal-bldgs., 26, The Butts.: *T. Oliver, 9, Spring-gdns., St. Paul's, Worcester, £48,601.

Wrexham.—Houses at Queen's-park, for T.C. J. M. Davies, B.S.: *Thomas Warrington & Sons, Ltd., 84, Station-rd., Ellesmere Port, Ches.

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